Evaluation of the Demonstration Sites in the ConnectEd Network

Submitted to: James Irvine Foundation

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Multiple Pathways: The ConnectEd Network of Schools

It should be common sense: guiding young people to a successful future should mean preparing them for both college and careers, not just one or the other. But California schools, like most others in the nation, too often have treated academic and technical studies as an either/or proposition. This dichotomy has not served students or society well. Far too many students are dropping out of school, and many others earn a diploma without truly mastering the knowledge and skills necessary for life after high school.

One promising strategy for engaging students in learning that prepares them for several options after graduation is the multiple pathways approach. Multiple pathways are comprehensive programs of study that connect classroom learning with applications in the real world outside school. Pathways integrate rigorous academic instruction with demanding technical curricula and work-based learning. This study shows that this approach does, indeed, show promise for being an effective approach to enhancing the engagement and learning of students, while also preparing them effectively for a wide range of careers. The potential of this approach warrants additional research attention, since the propensity of high school students to disengage and to feel disconnected from school is so well known.

In California, the James Irvine Foundation created ConnectEd: The California Center for College and Career to promote multiple pathways that link to the state's 15 major industry sectors. ConnectEd works on several levels to:

- Design multiple pathways and curricula;
- Provide policy analysis and advocacy to advance multiple pathways; and
- Promote school improvement through professional development and related activities.

The ConnectEd Network of Schools, a demonstration project supported by Irvine, plays a critical role in expanding student options through multiple pathways and illuminating how pathways work and what they can accomplish. The Network consists of 16 sites spread across the state that vary significantly in structure, ranging from small autonomous schools to Regional Occupational Programs (ROPs) serving

several districts, and including a charter school and a program run by a nonprofit organization.

Network schools have diverse populations, and most are located in low-income areas. They enrolled a slightly higher concentration of African-American and Asian students than did the average California high school in 2007–08, and the student population was divided nearly equally among males and females. All operate some form of multiple pathways program that integrates career and technical education (CTE) with academic studies. The oldest program goes back to 1970, and the newest began in 2006. Ten of the programs have been in existence since 2000.

Evaluating the ConnectEd Network Sites

ConnectEd has made a strong commitment to rigorous evaluation of multiple pathways since its inception. A major objective of the Network sites is to provide data on a set of core indicators of student outcomes to document the effectiveness of multiple pathways. Undertaken during the 2007–08 school year, with follow-up ongoing in 2008–09, this evaluation of Network sites sought to answer these questions:

- What is the evidence that multiple pathways produce greater student engagement, improved achievement, and higher rates of school completion than do more conventional high school programs?
- What is the impact of the pathways approach on student attitudes, behaviors, "soft skills," motivation, awareness of career options, and workplace readiness?
- What key program variables characterize implementation of pathways at each site?
- How well have sites implemented pathways, according to a rubric defining the key pathways features thought to contribute to improved student outcomes?
- What other variables (e.g., factors related to students and teachers) influence implementation?
- What are the relationships between student outcomes and fidelity of implementation of key features?
- What major implementation themes emerge that are important to understanding whether and how pathways influence student outcomes?

A full description of the evaluation methods is contained in Appendices A–C of the report. The following sections summarize the findings of the evaluation.

Student Outcomes

Indicator Data: Achievement

Researchers analyzed student-level data from the Network sites to examine a variety of indicators, including test scores on the California Standards Tests (CSTs) and the California High School Exit Exam (CAHSEE). In one set of analyses, they compared the results for the Network as a whole to the state and disaggregated the results for race/ethnicity. They found that:

- Network students were more likely than other California students to pass the CAHSEE on their first attempt in 10th grade. Pass rates were higher for Network students in both English language arts and mathematics, regardless of race or ethnicity.
- On the CSTs, end-of-course exams given in grades 9, 10, and 11, Network students performed similarly to other students statewide, with several exceptions and some variation by grade level.
- On the English CSTs, White and Asian Network students performed less well than their counterparts statewide in all three grades, while African-American and Hispanic students outperformed their state peers.
- On the science CSTs, Network students' performance was similar to statewide performance in biology, earth science, and life science. In chemistry and physics, Network students fared less well than their state peers.
- Network students of all ethnicities outperformed their state peers in earth science, and African-American and Hispanic Network students also outperformed them in life science. Asian and White Network students in grade 10 outperformed their peers in biology as well.
- In history, Hispanic and White Network students outperformed their state peers in U.S. history, but not world history. African-American Network students outperformed their counterparts in world history, but not U.S. history.
- Notably, in mathematics, the only Network students to outperform their state peers were Hispanics in algebra 1 (grades 9 and 10) and African Americans in algebra 2 (grade 10).
- At Network sites, 96 percent of 9th-graders, 90 percent of 10th-graders, and 98 percent of 11th-graders had sufficient credits to be promoted to the next grade and were on track for an on-time graduation.

- On average across the sites, 92 percent of 9th-graders, 81 percent of 10th-graders, and 73 percent of 11th-graders expected to re-enroll in the pathways program the following year. Five of the 12 sites providing data for all three grade levels predicted that 100 percent of their students would continue enrollment in the pathways program from one year to the next.
- Overall attendance rates for Network students were higher than national attendance rates, just over 94 percent compared to 92 percent.
- Of the approximately 2,300 Network seniors in 2007–08, 98 percent graduated and, on average, 35 percent had met the entrance requirements (a-g courses) for admission to the University of California/California State University postsecondary systems. This average masks the fact, however, that 10 of the 15 have rates higher than the state 2007–08 average of 36 percent, and four sites have rates higher than 90 percent.
- At the nine Network sites able to report their seniors' plans for after graduation, 38 percent planned to attend a 4-year college and 49 percent a 2-year college. Five percent planned to enter military service, 4 percent the labor force, and 3 percent an apprenticeship or technical training program.

While these analyses resulted in some positive and interesting findings—even though they were certainly not consistently positive across all subject areas and all grade levels—calculating averages for the Network or comparing the Network to the state as a whole provided a limited view. In order to assess how much the analyses for the Network as a whole might be masking individual site results that would provide another perspective on student learning outcomes, additional analyses were conducted. In these analyses, results for individual sites were compared, and sites were compared to their local settings. The site-by-site analyses revealed a number of positive results for certain sites and on certain of the indicators. The site-by-setting comparisons tended to show more positive results, apparently as a result of comparing to their local setting (school or district), rather than to the state as a whole.

Qualitative Data: Student Learning, Attitudes, and Behavior

To examine Network students' attitudes, behaviors and skills, awareness of career options, and readiness for work or college, researchers conducted interviews and focus groups with district and school administrators, teachers, and students. Network students and teachers said they believed that student attitudes were much more positive when compared with other programs they had been in or taught in. Students

appreciated the freedom to make choices about their studies, demonstrated self-confidence and motivation, and worked well together in the close-knit programs. Network students and teachers also noted that students discovered the career areas that interested them and adopted an attitude of professionalism toward their work. Most—but not all—Network sites offer off-site work-based learning experiences to make students aware of options in a given industry area. Students enjoyed these experiences and felt they had "a head start" on others entering the field.

Students learn the skills necessary for their chosen field, as well as general workplace skills, often in facilities designed to resemble actual work settings (i.e., medical office, design studio, etc.). They generally understand the expectations adult professionals in the field will have for them. Pathways programs tend to teach presentation, communication, and other workplace skills explicitly and offer assignments designed to build skills in teamwork, research, problem solving, processing, and time management.

Network students tended to internalize the "college-going culture" fostered by the programs, and some changed their educational plans as a result of changing their employment goals.

Program Implementation

Based on qualitative data gathered during Network site visits, review of documentation, and the coding of data according to the ConnectEd rubric, researchers identified the following variables that characterize and potentially influence the implementation of the multiple pathways approach.

Program Structure

The structure or format of these programs varies enormously, and the size of the student body at Network sites ranges from a low of 19 to more than 1,200. Five are small autonomous high schools that have great flexibility in several important areas: scheduling, setting graduation requirements, designing course sequences, and developing budgets. They typically limit the number of pathways offered, however, and may have difficulty providing the advanced classes and extracurricular activities offered by comprehensive high schools. Five are academies within larger schools. These programs can provide a supportive community and integrated coursework, while benefitting from the resources available in larger schools. Challenges include recruiting students and teachers, scheduling, and providing time for teacher collaboration.

Two sites are Regional Occupation Programs. In other sites, ROPs are partners with Network schools, but few belong to the Network themselves. ROPs, in general, have considerable latitude in CTE programming and can offer students work-based learning opportunities, but they may struggle to offer rigorous academic study. Two sites offer elective course sequences or a sequence of elective CTE courses open to all students—in these cases using the Project Lead the Way program. Generally there is little integration, however, between technical and academic classes and fewer opportunities for students to develop a sense of community and long-term relationships as is possible in smaller, more self-contained programs.

Two Network schools can be considered outliers because they differ substantially from the rest. One is a nonprofit organization that provides an off-site project-based course and internship/mentor program to students from 18 high schools. The other offers a half-day program to 11th- and 12th-graders that provides credit for English, social studies and science, and CTE courses. These programs can reach students from many schools and provide specific advantages, but they also find that coordinating with students' home high schools can be difficult.

Coordination, Scheduling, Leadership, and Other Factors

Coordination with home high schools was uneven, with some programs keeping in close communication with students' home high schools, while others felt that they operated independently without much communication with students' regular schools. Network sites and home schools coordinated in areas such as curriculum, counseling, recruitment, and attendance.

Coordination with local and regional postsecondary institutions occurred through both formal articulation agreements and informal arrangements. The most common arrangement allows students to obtain both high school and college credits for some courses offered either at the high school or at the college. Some Network schools have arranged for free or reduced tuition for college courses, and some colleges will allow Network students to skip introductory courses. Students and teachers note that such arrangements are helpful in preparing students for the reality of college life.

Scheduling was one of the biggest challenges for Network schools, which reported difficulties with assigning teachers to classes, accommodating students' requirements and electives, and providing sufficient time for teachers to plan together. The latter was especially challenging. Eight sites provided some form of planning time, but others were not able to do so. Teachers reported working together informally during buy-back days, at lunch, via email, or when car-pooling.

Most sites reported that their districts were supportive of their programs. They received guidance and assistance from district leaders, support for specific initiatives (such as creating an academy), and professional development relevant to the program. The few sites that felt their districts were not supportive generally cited a lack of understanding of the alternative approaches and a scarcity of resources. Most sites also demonstrated strong leadership from the program director and principal, and many teachers attributed their program's success to ongoing and supportive leadership.

Though most sites recognize the need for parent involvement, few have it. Parents are generally willing to attend "showcase events" and parent education nights, but are not otherwise involved.

Most sites indicate they would like a facility that resembles and is equipped as a workplace. Some have new facilities designed to meet their needs, while other sites have had to adapt to environments not designed for their programs. A common challenge across sites is the establishment, equipping, and maintenance of facilities that suit program goals and operations.

All sites value having and using technology as a critical component of their programs, and they experience the same challenges as other schools in keeping their technology up-to-date. Most sites are coping with aging computers and equipment and struggling to find the resources for upgrading.

Transportation issues vary by program, but seem to present one of the greatest barriers to program implementation. These can be especially challenging for programs where students spend a great deal of time in workplaces not close to the school. In large districts, students must travel considerable distances both to the Network site and then to the work site.

Curriculum and Instruction

Curriculum and instruction vary widely between and within Network sites. High-quality cross-curricular projects and units prevail in some sites, while in others the integration of academic and technical content occurs mainly through individual teacher initiative. The lack of a dedicated student and teacher cohort is one obstacle to integrating academic and technical studies. Program staff and administrators feel hampered by the master schedule and inability to keep pathways students in a cohort. Math is the biggest hurdle in creating a cohort for pathways students. Because students are placed by skill level—or can choose to take various math courses in different years—sites struggle, often finding innovative ways, to incorporate math into pathways programs.

The challenge of integrating curriculum is evident in most sites, though many have very good examples of integrated projects that provide opportunities for students to apply their academic knowledge to interesting and engaging work-based learning projects. Another obstacle, however, is finding time and support/guidance for teachers to do the work of planning integrated curriculum.

Most of the sites evidenced less than a consistently high level of rigor—across their curriculum—needed for high levels of academic learning. In some cases, this is because the ability level of students who enroll is so varied—and often so low—that it is necessary to provide extensive support to help them be successful. In other cases, the instructors are missing simple opportunities to inject rigorous academic content into CTE tasks. Most sites are still working toward true integration of rigorous academic and technically demanding content.

Classroom observations rated sites highest overall for classroom management (planning, clear expectations, established routines, etc.) and climate (mutual respect, active student engagement, teacher feedback, etc.). The lowest ratings were related to integration (connections among disciplines, references to outside learning, differentiated instruction, etc.)

Work-Based Learning

Sites seek to offer a variety of work-based learning opportunities (internships, job shadowing, mentoring), but the availability of these is spotty. Site staff agree that work-based learning is valuable for many reasons, but that it is difficult to find the time and resources to build relationships with industry partners. Other challenges to implementing work-based learning include some students' need to maintain jobs, matching student interests with learning opportunities, and ensuring that these opportunities provide meaningful experience and training.

Support Services and Intervention

School counselors play many roles at Network sites, and they can personalize their work with students to a greater degree than their counterparts in traditional high schools, though not all Network sites have dedicated counselors for program students. Some counselors noted that they can provide more academic and career counseling services because they spend much less time dealing with discipline referrals than they do in traditional high schools. Many adults within the programs, as well as those who observed the programs and students, also commented on the mature behavior of the students.

For pathways programs in larger schools, the quality of the counseling depends on the counselors' understanding of CTE and the Network program. Two intervention approaches to assist struggling students were most common in Network sites: tutoring and offering credit-recovery courses.

Recruitment

Some sites have extensive recruitment efforts, and others do not recruit at all. In the latter case, this occurs primarily because the demand for places in the program exceeds enrollment capacity. Those who do recruit often involve current pathways students and their work in these efforts. Several programs noted that recruiting female students is a major challenge.

Teacher Background

Network teachers have a range of experience in teaching, but no common patterns of experience were evident. Many program administrators indicated that a teacher's willingness to collaborate or belief in the integrated approach was a significant factor in hiring decisions. Some programs have provided teachers with specific training in curriculum integration, while most offer more general professional development for all teachers, such as teaching literacy.

Implementation Factors Related to Student Outcomes

Researchers examined how well the programs aligned with the dimensions of a fidelity rubric developed by ConnectEd to identify desirable features of multiple pathway programs. It should be noted, however, that the sites were not selected using this rubric, nor were the sites directed initially to strive to align their programs in this way. Along the way they have been asked to use the rubric to pursue improvements to their programs. Sites were rated on the rubric on the degree to which they implemented 18 factors considered important to multiple pathways programs. These ratings were then compared with a ranking of sites based on a combination of achievement indicators. Researchers found no direct relationship between high scores on the fidelity rubric and high scores on the success index. When sites were grouped by structure into "academy-like" and "non-academy-like," the academy-like sites had a higher score on the success index. Researchers concluded that the fidelity rubric worked well in scoring some, but not other, types of programs and needed modification to become a useful measurement tool.

Significant Influences on Implementation and Outcomes

The review and analysis of both quantitative and qualitative data identified several factors that seemed to have the strongest influence on program implementation and outcomes.

The first factor clearly was the relationships among students and between students and teachers. Students across the sites consistently said that they valued pathways programs because of the strong positive relationships they have with staff and each other. Among students at all sites, this feeling of connectedness translated into strong motivation, high levels of engagement, and a mature attitude toward education and their future.

The second factor was staffing and teacher quality. In many cases, sites had assembled teams of teachers with high levels of expertise and commitment who collaborated well on developing curriculum and in monitoring student progress and working to ensure their success. The teachers who were interviewed commented frequently on the high level of satisfaction and professionalism associated with teaching in these programs. However, site administrators often found it difficult to determine in interviews if teacher candidates were truly committed to and capable of the collaborative work essential to pathways programs, and they also found it difficult to find teachers with both solid academic and technical expertise. Thus it was clear that factors associated with staffing and teacher quality heavily influenced the quality of the program.

Integrated instruction was the third factor. While most sites had made significant efforts to integrate academic and technical content, with considerable success in some cases, they also found it challenging to attain true and extensive integration. Sites also had differing interpretations of the concept of integration. They found it easier to integrate some academic areas than others; integrating math was particularly problematic.

A fourth factor was whether sites had meaningfully integrated work-based learning opportunities. Sites reported numerous barriers to establishing and sustaining such opportunities, especially the time needed to identify and arrange for such experiences. However, in cases where sites had been able to make them an integral part of the program, it was clear that there were greater benefits for students.

Costs of implementing multiple pathways programs was the fifth factor. Though an in-depth examination of costs was beyond the purview of this study, researchers learned some things about the associated costs. Network sites agreed that, without

federal Perkins funds, funds provided through the California Partnership Academy and the ROPs, and grants, they would not be able to operate. Nevertheless, their commitment to the programs was clearly evident in their unstinting efforts to seek the funding needed for the various ongoing and periodic costs. Significant costs are related to building or retrofitting facilities; obtaining and upgrading technology and equipment; and securing specialized supplies and consumables. Time—as always in schools—is a significant cost as well. Apart from instruction, time must be allocated for staff to work together to develop curriculum and plan integrated projects, as well as to develop and oversee work-based learning opportunities.

Conclusion

Overall, this study shows that the results on student achievement outcomes for those participating in these programs indicate positive effects of the program on a number of indicators of student learning for the Network as a whole and for particular sites or subject areas. The school reform literature notes that it is not easy to demonstrate positive effects on achievement—particularly at the high school level—so these results should not be taken lightly. In addition, while these programs vary significantly in format and structure, in size and industry sector with which they are aligned, the students and teachers in them consistently report strong positive outcomes for students in terms of learning, attitudes, and behaviors, and strong positive outcomes for teachers and administrators in their experiences with collaboration on curriculum and instruction and in their feelings of professionalism and efficacy.

In a study of high school reform models, Quint (2006) notes that the movement of high school reform to the top of the policy agenda was precipitated by rapidly-growing concern about high dropout rates and low academic achievement, particularly among disadvantaged young people. The "message" from this synthesis study was that "structural changes to improve *personalization* and *instructional improvement* are the twin pillars of high school reform" (p. iii). This evaluation study shows that the ConnectEd Network sites provide good models of how to initiate the construction of those pillars.

Introduction

California's high schools face a major and difficult challenge: how to engage young people in the serious learning that can ensure lasting success in further education, career, and the civic life of our state. The magnitude and severity of the problem are well known; far too many students are dropping out of high school, and many others earn a diploma without having mastered the knowledge and skill needed to succeed in postsecondary education and the world of work.

There are no simple solutions to this problem, no one right way. One promising strategy, however, is the multiple pathways approach—comprehensive programs of study that connect classroom learning with real-world applications outside school. Pathways integrate rigorous academic instruction with demanding technical curriculum and work-based learning—all set in the context of one of California's 15 major industry sectors. These sectors include the arts, media, and entertainment; biomedical and health sciences; building and environmental design; engineering; information technology; law and government; and 10 others.[1]

In April 2006, the James Irvine Foundation created ConnectEd: The California Center for College and Career to promote innovative practice, policy, and research to better define and expand multiple pathways in California's high schools. ConnectEd defines the multiple pathways approach based on four guiding principles and four components, as follows.

Guiding Principles of Pathways

Multiple pathways:

Prepare students for postsecondary education *and* career. A pathway must always address both objectives. Acknowledging that career success depends on postsecondary education and a formal credential, ConnectEd staff affirm that a pathways approach cannot reflect separate programs for different groups of students.

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[1] For a thorough description of multiple pathways, as well as summaries of relevant research and key policy issues affecting expansion of pathways in California, see *Expanding Pathways: Transforming High School Education in California,* January 2008, *High School Education in California,* January 2008, available at www.ConnectEdCalifornia.org.

Connect academics to real-world applications. Implementing a pathways approach means altering how core academic subjects are taught. Students master core subjects through applying them in the real world.

Lead to the full range of postsecondary opportunities. Pathways are designed to prepare students for all the options they might pursue after graduation from high school. Each pathway is tied to a particular industry theme that can engage any student, regardless of prior academic achievement.

Improve student achievement. Pathways are designed to produce higher academic and technical achievement, higher rates of high school completion, more successful transitions to postsecondary education and careers, and greater attainment of formal postsecondary credentials. They are also designed to support the development of students' critical-thinking and problem-solving, communication, and collaboration skills.

Core Components of Pathways

Multiple pathways provide:

Rigorous academic study that prepares students for success in community colleges, universities, and other postsecondary programs.

Demanding technical education that teaches concrete knowledge and skills to prepare youth for high-skill, high-wage employment through an emphasis on real-world applications that bring their academic and technical learning to life.

Work-based learning opportunities that enable students to learn through authentic experiences—internships, virtual apprenticeships, and school-based enterprises.

Support services that include counseling and supplemental instruction that may be needed to ensure students' success.

ConnectEd describes its mission as supporting "the development of multiple pathways by which California's young people can complete high school, enroll in postsecondary education, attain a formal credential, and embark on lasting success in the world of work, civic affairs, and family life." The staff pursues this mission through three major programs of work: (1) pathways design and curriculum development, (2) policy analysis and advocacy, and (3) school improvement through professional development and related activities. Helping to integrate all three of these programs is the ConnectEd Network of Schools, a group of 16 "demonstration" sites selected to develop an understanding of what pathways can accomplish and how they do it.

The Network of Demonstration Sites

The ConnectEd Network sites have an established track record in designing and implementing multiple pathways. The Network plays a critical role in advancing ConnectEd's overall mission to advocate for multiple pathways and expand student options in high schools throughout the state. For policymakers, educators, industry leaders, and community stakeholders, there is no substitute for seeing and directly experiencing multiple pathways at work in real schools.

Network sites work closely with ConnectEd staff engaged in curriculum development and other aspects of multiple pathway design. For example, Health Professions High School in Sacramento has collaborated with ConnectEd staff in developing a series of integrated units for biomedical and health science and creating an integrated curriculum planning guide. Other sites work with ConnectEd staff on curriculum for engineering; the arts, media, and entertainment; and law and government. Curricula produced through these efforts are shared throughout the Network, as well as with other schools in California planning or already operating pathways in related industry sectors.

To these ends, therefore, the Network has three primary objectives:

- Showcasing effective, well-designed examples of multiple pathways;
- Providing credible evidence of effectiveness on a core set of student outcome indicators; and
- Building a "learning community" that supports program improvement throughout the Network and among other schools engaged in multiple pathways.

To help build the Network, the James Irvine Foundation enabled ConnectEd to make a series of planning and implementation grants for program improvement to 16 California schools that had already demonstrated considerable experience in offering students one or more industry-focused pathways. To be selected, these demonstration sites had to meet a number of site selection criteria with respect to student and district demographics, curriculum, instruction, organization, and school climate (see Exhibit 1).

Creation of the Network proceeded in two stages. An initial grant, made to MPR Associates before the founding of ConnectEd and subsequently transferred to ConnectEd, called for identifying and selecting six demonstration sites. A second grant made directly to ConnectEd called for adding up to 12 more sites. As of April 2008, there were 16 sites in the Network.

Exhibit 1. Site selection pre-screening criteria

Student and District Characteristics

1. Minority students are more than 40 percent of the student population.
2. A range of existing Career/Technical Education (CTE) offerings is already available.
3. Geographic locations in total will create a network representative of the diverse regions of the state.

Curriculum

1. The technical and academic curriculum are aligned with state standards, frameworks, and instructional material.
2. CTE assessments are aligned with state standards, frameworks, and instructional material.
3. Staff are committed to using CTE courses as a vehicle for students to obtain a–g credit.
4. CTE courses incorporate a focus on high-level communications skills.
5. CTE courses are designed to prepare students to begin technical majors at the University of California or California State University.
6. CTE courses enable students to develop interdisciplinary knowledge through structured work on authentic problems.
7. Curriculum development is tied to labor market trends and the needs/interests of relevant local employers.

Instruction

1. Technical education and academic instruction are coordinated.
2. Teacher professional development aims to build expertise across sectors (i.e., technical knowledge for academic teachers, academic expertise for technical teachers).
3. Teachers have experience using project- and problem-based instructional approaches.
4. Work-based learning is coordinated with classroom instruction.
5. School leaders and teachers seek input outside the school on ways to improve the CTE program.

Organization

1. Efforts are made to help grade 9 students make successful transitions to grade 10.
2. Academic support, financial aid counseling, college prep, career advising, and personal counseling are an integral part of the program.
3. Alternative scheduling is used to improve delivery of CTE and academic courses.
4. School leaders and teachers use data to support instructional and operational decisions.
5. The learning environment is configured to support student achievement.

School Climate

1. School and program leadership is strong.
2. The teaching staff is highly dedicated and motivated.
3. Strong student motivation and engagement are evident.
4. The school takes an entrepreneurial approach to building partnerships, securing adequate funding, and ensuring sustainability.
5. Parents are active participants in the program.

The structure of the Network sites varies significantly. They range from small autonomous schools to academies to Regional Occupational Programs (ROPs), and each program brings a distinct set of challenges and opportunities. While the variation makes it difficult to generalize about the effects of the pathways approach, it also provides an opportunity to explore how the guiding principles and core

components play out in different contexts. In selecting the sites, ConnectEd staff sought to find those that reflected the core components and high quality of implementation that best represents multiple pathways programs.

Staff also wanted sites serving predominantly high-poverty students, that is, with a significant proportion of Title I students, and sites with programs open to all students. In addition, they sought balanced geographic and industry sector representation. They used a combination of applications, panel review, and site visits to identify the sites invited to join the Network.

As illustrated in Exhibit 2 and noted above, the Network sites vary in their structure, as well as in their career area focus, available resources, size, and length of operation. Four are California Partnership Academies with a specific set of requirements to meet. Each must be established as a "school within a school" with classes limited to academy students only. Students must have a mentor from the business community during the 11th grade and an internship or paid job related to the academy's occupational field or work experience to improve employment skills during 11th or 12th grade. Two other sites are also career academies within host schools, but they do not have funding and are not certified through the California Partnership Academy program.

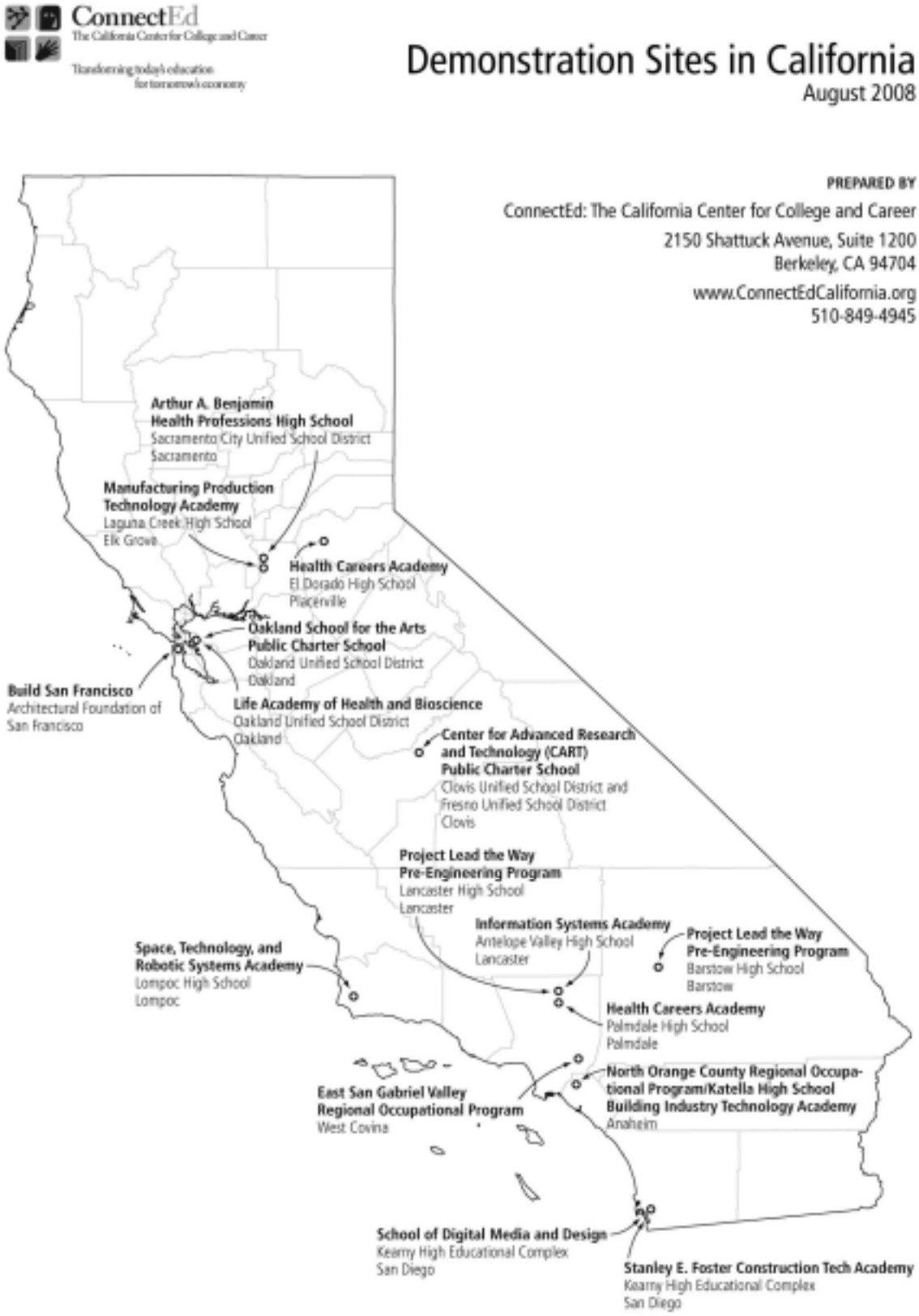
Five sites are small autonomous high schools, each of them with a specific focus. These sites have the greatest flexibility in terms of scheduling, requirements, and course sequences. They typically offer one pathway, such as the health sciences or the arts.

Two sites are Regional Occupation Programs or Centers (ROPs) and typically offer work-based learning opportunities to students at multiple high schools. At two other sites, elective course sequences or a sequence of elective CTE courses are open to all students, based on the Project Lead the Way model. Two Network schools are outliers that differ substantially from the others. One is focused on architecture and provides off-site project-based course and internship/mentor opportunities to students from 18 high schools. The other is a half-day program that draws 11th- and 12th-grade students from two school districts and provides labs in 14 areas such as forensics research, biomedicine, robotics and electronics, and law and order and policy (see Exhibit 2). A map of the sites showing their geographic distribution is displayed in Exhibit 3.

Exhibit 2. The ConnectEd Network of Schools—April 2008

ConnectEd Sites	Abbreviations used in figures	Program structure	Number of students served	Grade levels
Build San Francisco, San Francisco	Build SF	Internship/mentoring program and project-based course	19	9, 11, 12
Building Industry Technology Academy, Anaheim	BITA	ROP	155	9–12
Center for Advanced Research and Technology, Clovis	CART	Shared-time facility serving 11th and 12th graders from local high schools	1,195	11–12
Construction Technology Academy, San Diego	CTA	Small autonomous HS	448	9–12
East San Gabriel Valley Regional Occupational Program and Center, West Covina	ESGVROP	ROP/C	1,241	12
Health Careers Academy, Palmdale	HCA—Palmdale	Career academy, school-within-a-school	486	9–12
Health Careers Academy, Placerville	HCA—Placerville	Career academy	164	9–12
Health Professions High School, Sacramento	HPHS	Small autonomous HS	400	9–11
Information Systems Academy, Lancaster	ISA	Career academy	167	9–12
Laguna Creek Manufacturing Production Technology Academy, Elk Grove	MPTA	California Partnership Academy	147	9–12
Life Academy of Health and Bioscience, Oakland	Life Acad	Small autonomous HS; California Partnership Academy	239	9–12
Oakland School for the Arts, Oakland	OSA	Small autonomous HS; charter school	194	9–12
Project Lead the Way Pre-Engineering Academy, Barstow	PLTW—Barstow	Course sequence; working toward career academy	49	9–12
Project Lead the Way Pre-Engineering Program, Lancaster	PLTW—Lancaster	Course sequence; working toward career academy	67	9–12
School of Digital Media and Design, San Diego	DMD	Small autonomous HS	421	9–12
Space, Technology, and Robotic Systems Academy, Lompoc	STaRS	California Partnership Academy	109	9–12

Exhibit 3. Map of demonstration sites in California



Number of Student Participants

The size of the student body within each program ranges from a small group of 19 served by Build SF to more than 1,200 seniors served by East San Gabriel Valley ROP. In 2007–08, a large proportion of the students (42 percent) were seniors, reflecting the inclusion of the large number of seniors served by East San Gabriel Valley ROP and the Center for Advanced Research and Technology, which serves only 11th- and 12th-graders. Without these two sites, the distribution of students across grade levels in Network sites would be more balanced, with 28 percent freshmen, 31 percent sophomores, 23 percent juniors, and 18 percent seniors. Grade distributions for each site are displayed in Exhibit 4.

Exhibit 4. Enrollment and grade distribution in the ConnectEd Network of Schools

School	Number of students	Percentage of students in grade 9	10	11	12
Total	5,501	16	18	25	42
Build San Francisco	19	26	0	21	53
Building Industry Technology Academy	155	14	30	28	27
Center for Advanced Research and Technology	1,195	0	0	56	44
Construction Technology Academy	448	31	31	20	18
East San Gabriel Valley ROP	1,241	0	0	0	100
Health Careers Academy–Palmdale	486	24	41	22	14
Health Careers Academy–Placerville	164	14	44	19	23
Health Professions High School	400	42	29	29	0
Information Systems Academy	167	19	36	19	26
Life Academy of Health and Bioscience	239	25	27	26	23
Manufacturing Production Technology Academy	147	36	29	18	18
Oakland School for the Arts	194	23	26	23	28
Project Lead the Way–Barstow	49	22	22	39	16
Project Lead the Way–Lancaster	67	15	25	39	21
School of Digital Media and Design	421	31	29	21	19
Space, Technology, and Robotic Systems Academy	109	36	26	21	17

Evaluation Study

Evaluation has been an important aspect of building the ConnectEd Network. As noted previously, a central objective of the Network is providing data on a set of core indicators of student outcomes that can be used to document the effectiveness of the multiple pathways approach. This information—when combined with other research on career academies, integration of academic and technical curriculum, project-based learning, and work-based learning—is essential to providing policymakers and other stakeholders with evidence that the multiple pathways approach is effective in engaging young people, raising student achievement, generating high graduation rates, and increasing the number of high school graduates who make a successful transition to postsecondary education and career.

Through the Network, ConnectEd seeks to identify, support, and showcase robust, effective examples of the multiple pathways approach—comprehensive programs of academic and technical study organized around major industry sectors that prepare students for success in both college and career. As a condition of support, each grantee must participate in a coordinated program of evaluation designed both to help them implement their individual initiatives and to inform ConnectEd and the larger education community in California about the effectiveness of various multiple pathways approaches.

Evaluation during the 2007–08 school year (based on indicator data from the 2006–07 school year) focused on a central objective: collecting data on a core set of indicators related to student outcomes. MPR staff collected, analyzed, and reported these data for each of the initial six sites selected under the first grant, as well as two additional sites that were part of the second round of grants. Evaluation during the 2008–09 school year began in June 2008 and included all 16 current sites. As with the first-year assessment, the evaluation for the follow-up year included collecting data from the sites on a set of common core indicators of student outcomes (using data from 2007–08). Additionally, the evaluation expanded its focus to include an examination of how each site implemented essential features of multiple pathways.

There are important limits on evaluation in the Network. Presently, there are only 16 Network sites. These were not selected randomly, and within sites, students choose to participate in pathway programs. Therefore, it is not possible to draw the kinds of causal conclusions that can result from evaluation based on experimental design and random assignment of schools and students.

Additionally, because of the small number of sites (as well as a selection process that intentionally selected a range of approaches to multiple pathways—i.e., theme-based schools, schools-within-schools, ROPs, shared-time half-day programs, etc.), it is not possible statistically to try to isolate the correlation between specific program characteristics and student outcomes. Strictly speaking, it would be inappropriate to use the Network sites as the basis for an assessment of "best practices," seeking to unpack the effects of various multiple pathways components, such as curriculum integration, work-based learning, block scheduling, support services, school leadership, targeted professional development, and others.

What the evaluation does provide is (1) documentation of the academic performance of students participating in pathways at each site, using a set of core indicators and (2) information about the fidelity of implementation in each site to various components of multiple pathways. It also provides information on cross-cutting themes or patterns.

The evaluation has three goals: (1) to collect data documenting the implementation and impact of the grantees' models; (2) to assist grant recipients in improving their individual initiatives; and (3) to assist ConnectEd in creating a larger "learning community" building a reliable knowledge base for promoting academically and technically challenging career and technical education (CTE) programs elsewhere in California and across the country.

Because the evaluation is currently limited to a small number of sites, it should be considered exploratory. Nevertheless, the evaluation can reasonably be expected to accomplish the following objectives:

- Provide evidence of the impact of the grantees' programs on student learning and achievement and on students' attitudes and learning behavior (through teacher reports) that could be considered indicative of the potential of such programs;
- Provide evidence that participation in these programs develops students' awareness of real-world career experiences and opportunities and encourages them to pursue further postsecondary education;
- Provide evidence for the impact of these programs on teacher pedagogical practice and on the culture of schools and other organizations implementing such programs;
- Collect descriptive data on the implementation of the program—planning, delivery models, participants, instructional practices, and partnerships; and
- Collect data that can be translated into specific recommendations for improving the design/implementation of the programs.

Primary audiences for the evaluation include the James Irvine Foundation, ConnectEd staff, and the sites themselves. In keeping with the goals of better defining the key attributes of multiple pathways and documenting their effectiveness, the Foundation wants to learn what features deemed critical to the effective implementation of multiple pathways are evident in the demonstration sites and the extent to which multiple pathways produce better learning outcomes than those achieved by more traditional high schools. ConnectEd staff will use the results to identify areas of strength and weakness for the Network sites and, thereby, identify targets for technical assistance. Technical assistance will be provided to grantees to assist them with planning and implementing effective program innovations—providing or brokering technical assistance in such areas as needs assessment, strategic planning, program and curriculum development, professional development, assessment, and accountability and evaluation. Grantees will benefit—as research shows any educational entity does—from using data to understand the strengths and weaknesses of their programs and identify ways to modify their approach to ameliorate any weaknesses.

A secondary audience for the evaluation includes the larger educational community in California, especially policymakers and practitioners striving to establish effective multiple pathways programs. While the number of sites in the Network is currently very small, precluding generalization of the findings to all sites implementing the approach advocated, much can be learned from exploring the strategies used in these sites to establish an effective program. The very fact that the sites differ so much in terms of grade levels served, content focus, and program structure afforded the opportunity to conduct an implementation study to explore and identify features that may be common to all or many of the sites. This work also will be important in identifying promising practices that (1) can be explored further in follow-up studies of increased rigor and (2) can be discussed among multiple pathways practitioners and policymakers.

Evaluation Questions

Evaluation staff paid attention to three critical issues: (1) clarifying the key questions that the evaluation seeks to answer, (2) identifying appropriate evaluation methods, and (3) defining key program variables and quantifiable measures of student outcomes that can be tracked reliably over the course of the grant and beyond. The evaluation was tailored somewhat to the specifics of each site in terms of its structure, content, student selection procedures, and the availability of data on the specified indicators, but overall the evaluation sought answers to the following key questions:

- What is the evidence that pathways, as implemented in these 16 sites, produce greater student engagement, higher achievement, and higher rates of high school completion than do more conventional approaches to high school education? What is the reported impact of the program on student attitudes, behaviors, career skills, motivation, awareness of career options, and workplace readiness?
- What are key program variables that characterize the implementation approach at each site, and how well aligned is implementation at the sites with features of effective multiple pathway programs?
- What other variables influence implementation, e.g., factors related to students and teachers?
- What are the apparent relationships between student outcomes and fidelity of implementation to the key features?
- What major themes affecting implementation emerged that are important to a clearer understanding of whether and how pathways influence student outcomes?

The logic model and data request tools, methods, and data collection instruments used in the evaluation are presented and described in detail in Appendices A–C .

Organization of the Findings

The next section of the report is organized according to the research questions identified above. The first part presents findings related to the impact of the program (1) on student achievement, grade-to-grade retention, and high school completion and (2) on student attitudes, behaviors, 21st-century learning, awareness of career options, and workplace readiness. The second part reports findings related to implementation. It provides descriptive information regarding program variables characterizing the Network sites and includes results showing how well sites have implemented the pathways approach based on a rubric developed for this purpose. It also presents a discussion of results from linking implementation factors to student outcomes and explicates key factors that seemed to affect implementation. These factors were identified through a comprehensive analysis of the qualitative data, debriefings among research team members, and review of the documents collected before and during site visits.

Findings Related to Student Outcomes

What Is the Impact of the Multiple Pathways Approach on Student Achievement, Student Attitudes, and Career Skills and Awareness?

This section compares the 5,501 high school students served by the 16 Network sites with students throughout the state of California. As noted in the introduction, the sites within the ConnectEd Network vary significantly in structure, content focus, resources, size, and length of operation. Later sections of this report describe how variations affect implementation of the multiple pathways approach. These variations also may be associated with student achievement, but because of the small number of sites and, for the most part, small number of students taking any particular achievement exam, it was difficult to tease out relationships between student achievement and program variables. We did, however, explore some associations between implementation and achievement indicators using indices of implementation and success.

This section presents the results of three types of comparative analyses. The data are first presented comparing the overall performance of students in the Network sites with statewide performance of students on a set of achievement indicators, controlled for race/ethnicity. The disaggregation of data was important for learning how the performance of students from certain racial/ethnic groups compared with the performance of these groups statewide. That is, we wanted to know to what extent these programs are closing the achievement gap between racial/ethnic groups.

For each subject area, we also present the data disaggregated by individual sites. The overall analysis tended to mask some differences among sites that were important to highlight. Through discussions about the data with each site, we were able to elucidate some of these differences in performance and some potential reasons for them. These observations are integrated in the discussion of results.

Finally, we present site-to-setting comparison analyses through which we compared the results for individual sites with a relevant comparison group, for example, the school as a whole or the district. The differences between site and comparison group results on each of the performance indicators are presented as individual tables (see Appendix E) and synthesized in Exhibit 20 later in this report.

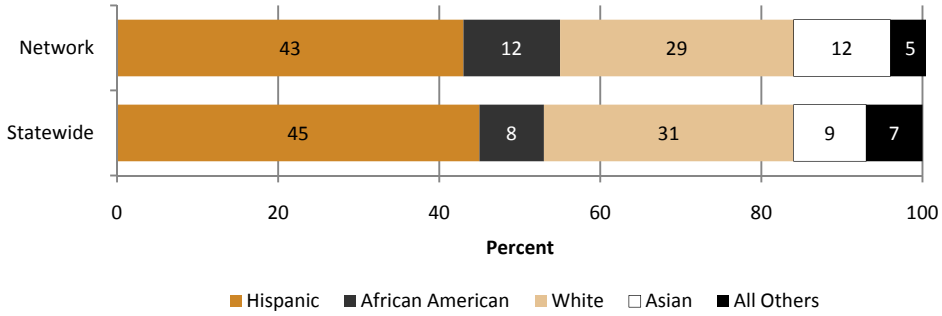
Results from Analyses of Indicator Data

To answer the first part of this evaluation question, the researchers requested that each site send student-level data related to as many indicators as possible. We began the collection of indicator data by sending a letter to all sites along with a template for site personnel to use in organizing their data (see Appendix A). The results presented below are based on the aggregated data on common elements. Outcomes assessed included whether 10th-graders passed the California High School Exit Exam (CAHSEE), scores on the California Standards Tests (CSTs), promotion to the next grade level, whether the students were expected to continue in the particular program, and attendance. We also report 12th-graders' graduation rates, whether seniors were eligible for UC/CSU admission (based on completion of all a-g course requirements), and postsecondary plans. Contextual variables included 2007–08 grade level, gender, and race/ethnicity. Several other data elements were requested but not used in the analyses. In some cases, sites did not have data on grade-to-grade promotion, or they may have had cumulative grade point averages (GPAs) rather than one-year GPAs. Most—but not all—sites were able to send data on seniors' postsecondary plans, but information about what students actually do after graduation is rare.

Statewide CAHSEE and CST scores were obtained from the California Department of Education's DataQuest website (http://data1.cde.ca.gov/dataquest). This website provides overall test score results (including proficiency levels by grade), as well as test score results disaggregated by race/ethnicity and by gender.

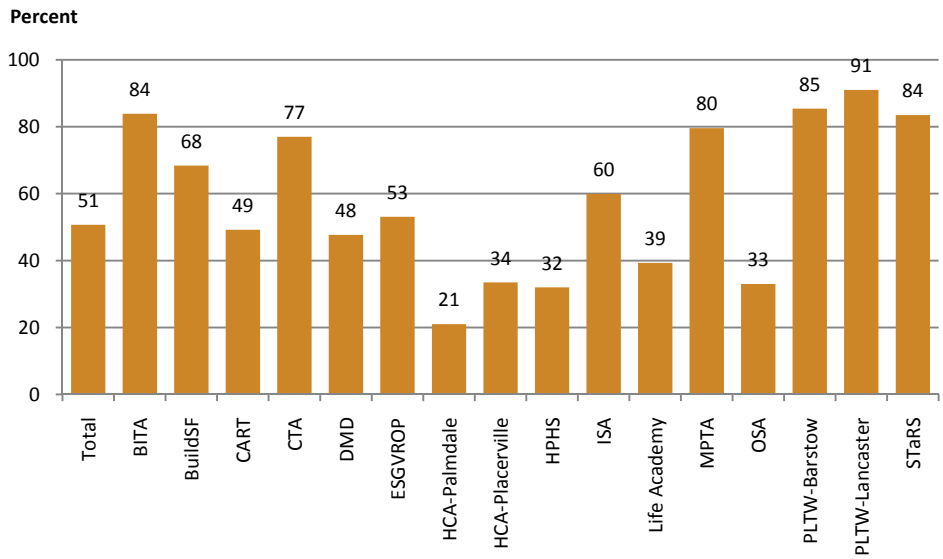
ConnectEd Sites enrolled slightly higher concentrations of African-American and Asian students than did the average California high school. In the ConnectEd Network, 12 percent of all students were African American, versus 8 percent statewide; 12 percent were Asian, versus 9 percent statewide. Statewide, 45 and 31 percent of high school students were Hispanic or White, respectively, compared with 43 and 29 percent of students in the ConnectEd sites (Exhibit 5). The racial/ethnic distributions varied greatly by site, with a Hispanic population at or over 70 percent at three sites and an African-American population over 15 percent at four other sites.

Exhibit 5. Racial/ethnic distribution of students in the Network and statewide, 2007–08



Similar to the state overall, males and females were approximately half of the population; in ConnectEd sites and in the state, males represent 51 percent of high school students. These distributions vary by site: 11 of the 16 sites have at least a two-thirds majority of one gender (Exhibit 6).

Exhibit 6. Percentage of male students at Network sites, 2007–08



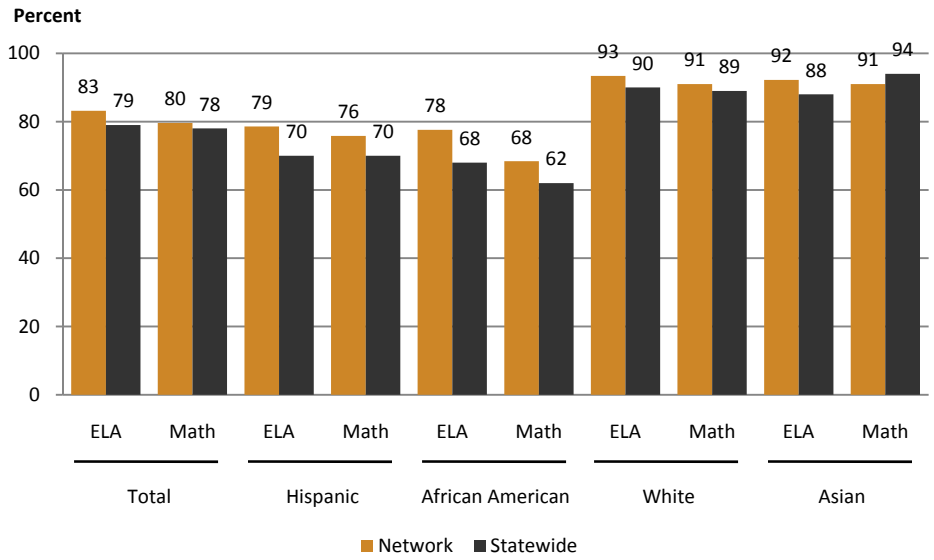
The primary analyses of student achievement consist of a set of comparisons, by race/ethnicity and grade level, to students statewide. The state comparisons are presented in the subsections below, followed immediately within each subject area by a display of the proportion of students at each site reaching proficiency. These site-by-site presentations do not take into account race/ethnicity or student grade level

because of the relatively small number of students at each site taking each test. At the end of the section, more detailed site-to-setting comparisons have been made. The local comparisons include those for each site at levels appropriate to the site. For sites that are programs within schools, we made comparisons to the school as a whole and to the district. For sites that are schools themselves, we compared them to their home district. East San Gabriel Valley ROP students are not represented in the sections on student achievement, because their data focused on the seniors involved in work-based learning activities, and seniors do not take the exams of interest.

Success on the California High School Exit Exam (CAHSEE)

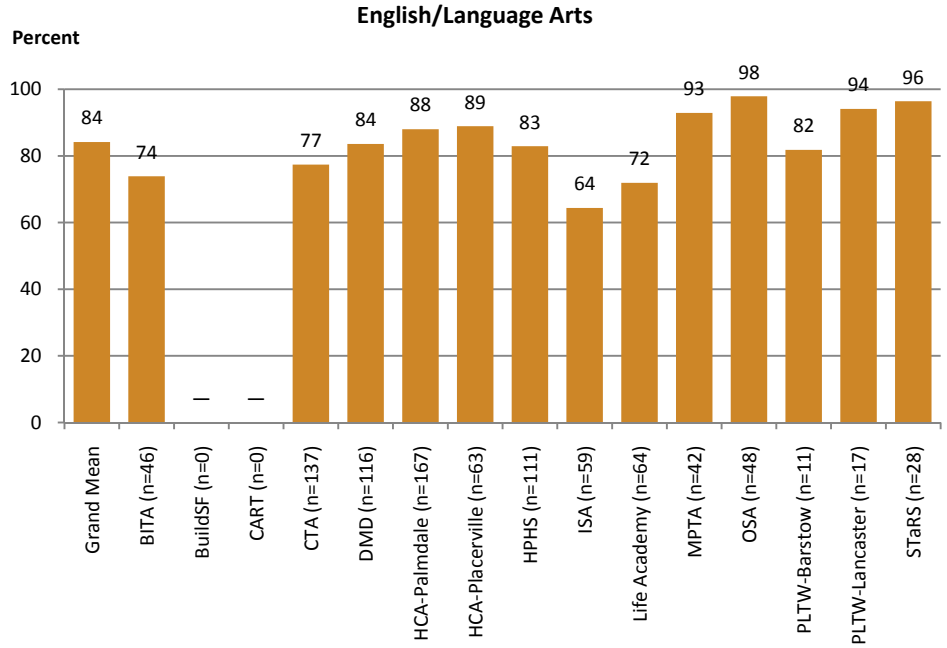
It is noteworthy that students enrolled in multiple pathways in the Network sites were more likely to pass the CAHSEE on their first attempt in 10th grade than were high school students generally. On the English Language Arts assessment, 83 percent of Network sophomores passed the exam, compared with 79 percent of sophomores statewide. Pass rates within Network sites were 79 percent for Hispanics and 78 percent for African-American students, compared with 70 and 68 percent for their counterparts statewide. Similar patterns are evident for the mathematics assessment: 80 percent of Network sophomores passed the exam, compared with 78 percent of sophomores statewide. Pass rates within Network sites were 76 percent for Hispanics and 68 percent for African-American students, compared with 70 and 62 percent for their counterparts statewide (Exhibit 7).

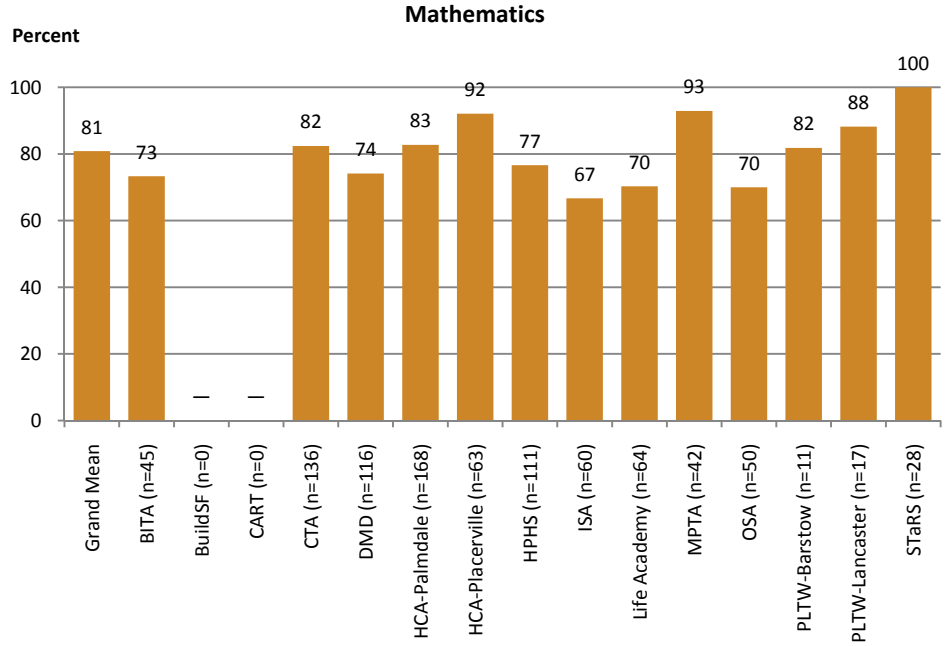
Exhibit 7. CAHSEE pass rates in English language arts and mathematics of 2007–08 10th-graders, by race/ethnicity



Tenth-grade CAHSEE pass rates at each of the 13 sites serving 10th-graders are generally similar to one another. Nine Network sites had English pass rates over the state average of 79 percent, and four of those sites had pass rates over 90 percent. Similarly, seven Network sites had mathematics pass rates over the state average of 78 percent, and three of those sites had pass rates over 90 percent (Exhibit 8).

Exhibit 8. CAHSEE pass rates in English language arts and mathematics of 2007–08 10th-graders, by site



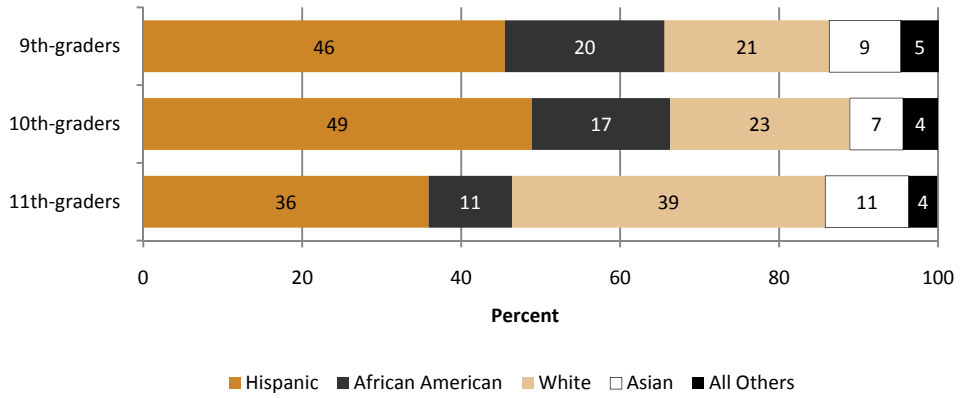


— Not available.

Proficiency on the California Standards Tests (CSTs)

At the high school level, the CSTs reflect end-of-course exams taken by students after they complete a specific subject area course. (Only students in grades 9, 10, and 11 take the CSTs; therefore, no seniors are represented in the following section.) With the exception of English 9, 10, and 11, the grade level during which students enroll in any specific course varies. To place the following sections in context of the racial/ethnic breakdown among student participants within Network pathways in the 2007–08 school year, Exhibit 9 presents the racial/ethnic distribution for grades 9, 10, and 11. Hispanic students comprise the largest proportion of students in the Network pathways in grades 9 and 10, followed by African-American and White students whose proportions are similar. In grade 11, White students comprise the largest proportion of students, followed by Hispanics and then by African-American and Asian students. This change in distribution across grade levels signals nothing more than the addition of 667 11th-graders from the Center for Advanced Research and Technology (CART), the majority of whom are White. Without CART's 11th-graders, the 11th-grade racial/ethnic distribution of the Network would be similar to that at the 9th grade (46 percent Hispanic, 18 percent African American, 22 percent White, 8 percent Asian, and 6 percent other.

Exhibit 9. Racial/ethnic distribution of students in the Network sites, by grade level, 2007–08



Like many educators throughout the state, administrators and teachers at several Network sites expressed concern that student scores on the CSTs do not indicate students' true knowledge because students do not consider them to be high-stakes assessments—as compared with the CAHSEE. Although policymakers and the public use CST results to make judgments about schools and their success, they

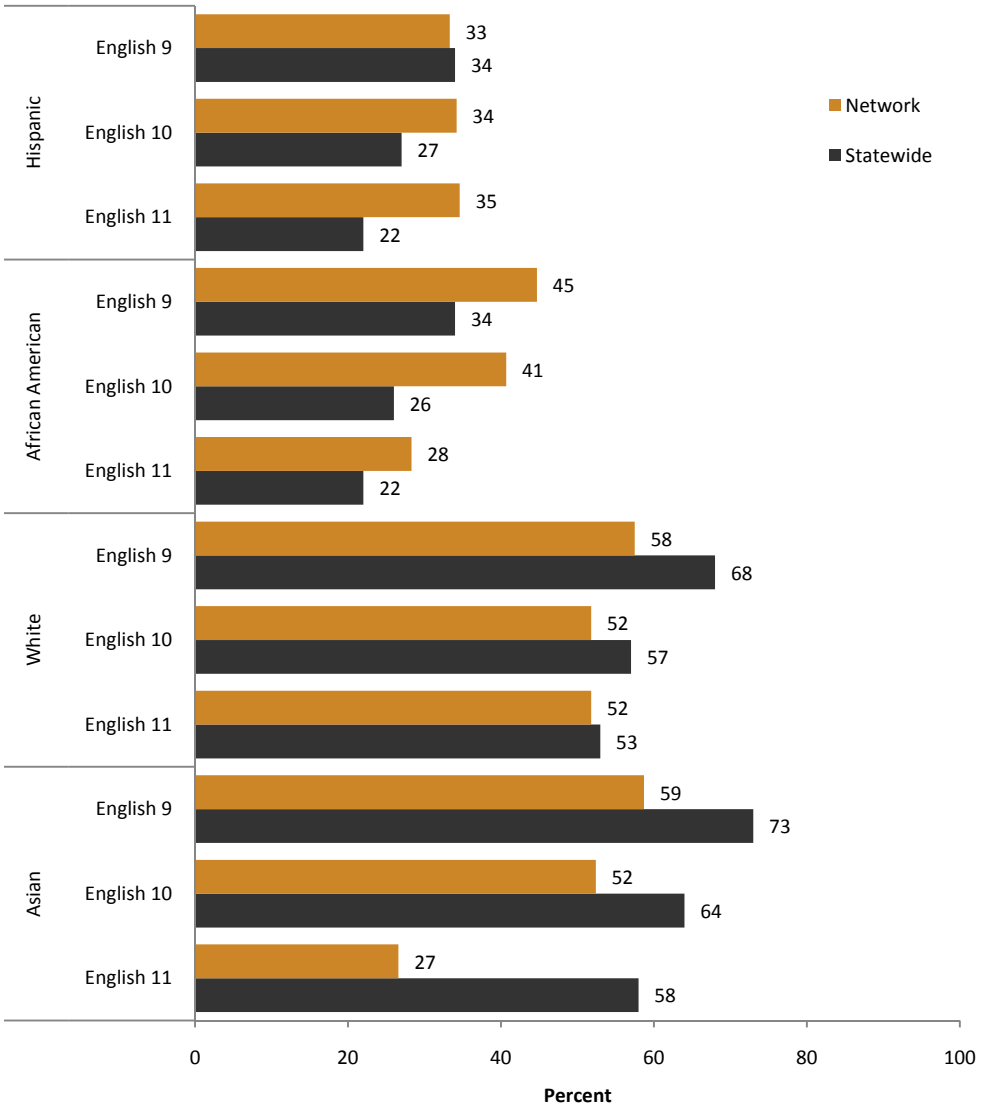
generally have no consequences for individual students. According to many state educators, the difference between students' performance on the English CSTs and the 10th-grade CAHSEE reflects not only the level of the exams, but also the consequences attached to passing (or failing) the CAHSEE. This possible explanation for student performance on the CSTs was confirmed by many of the program directors in the Network. "The simple answer is 'it (CAHSEE) matters'," noted one director when asked about the discrepancy between CAHSEE and CST performance. "We have to make it (CSTs) mean something. They don't care about it." Another noted that a principal at the home school was "floating a proposal" to make high school graduation contingent on a student reaching proficiency on the CSTs.

Although there is no compelling reason to assume that students in Network sites would try any less or more than students statewide, an argument could be made that students in sites that include year-end performance exhibitions as part of their curricula are more focused on doing well in those exhibitions than on the state CSTs.

English Proficiency

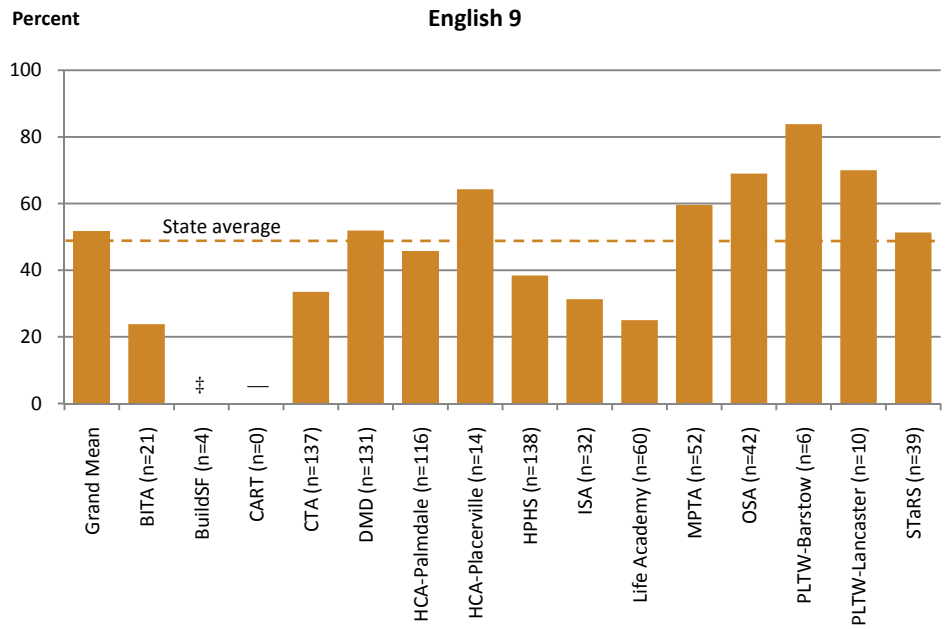
With the exception of English 9, English test performance of students in the Network was similar to those of students statewide: Network students reached proficient or advanced levels on the English 9, 10, and 11 CSTs at rates of 44, 42, and 40 percent, respectively, while students statewide had rates of 49, 41, and 37 percent (see Appendix D). However, disaggregation by race/ethnicity reveals differences. For English 10 and 11, the proportions of Hispanic students performing at a proficient or advanced level were 7 or more percentage points higher than Hispanic students statewide (34 versus 27 percent and 35 versus 22 percent). The proportions of African-American students performing at a proficient or advanced level on the English exams were between 6 and 15 percentage points higher than African-American students statewide (45 percent versus 34 percent, 41 percent versus 26 percent, and 28 percent versus 22 percent, respectively, for English 9, 10, and 11). White and Asian students participating in the Network pathways did not reach levels of proficiency or above on the English CSTs at the rates of their statewide counterparts (see Exhibit 10).

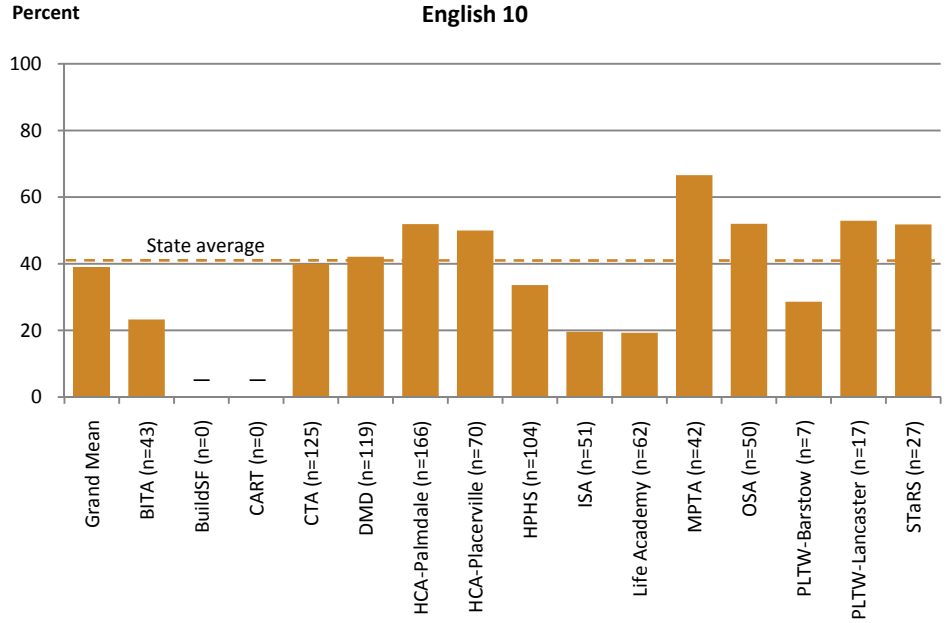
Exhibit 10. Percentage of students scoring at proficient or advanced levels on English CSTs, by race/ethnicity and grade level, 2007–08



The proportions of students who reached proficient or advanced levels on the English CSTs varied widely by site. For the English 9 CST, eight sites had higher proportions of students reaching those proficiency levels than did the state overall; this number decreased to seven for the English 10 CST, and decreased further to five for the English 11 CST. Exhibit 11 presents these results on a site-by-site basis; the horizontal lines indicate the percentage of students statewide who reached a proficient or advanced level.

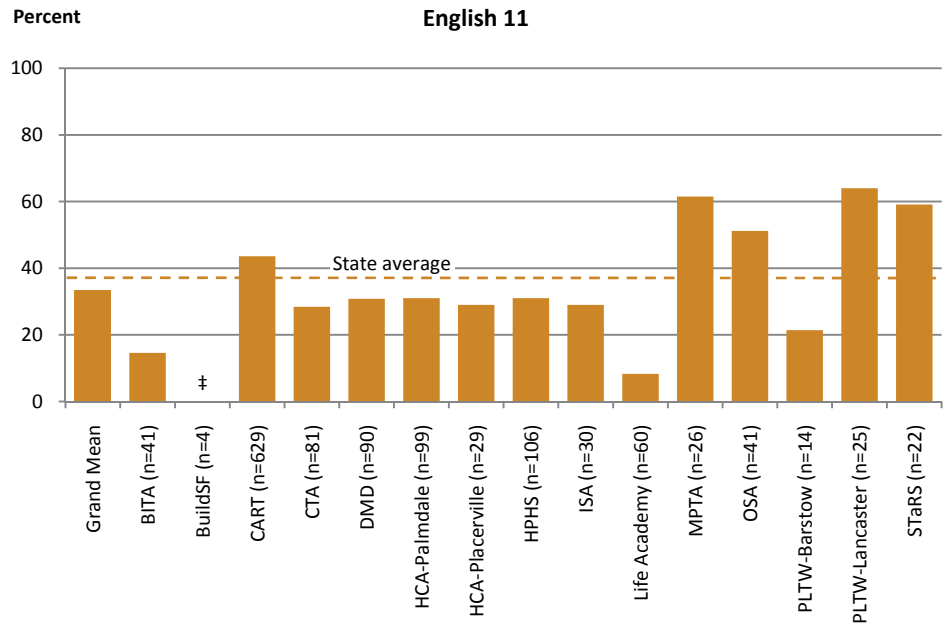
Exhibit 11. Percentage of students scoring at proficient or advanced levels on English CSTs, by site, 2007–08





See notes at end of exhibit.

Exhibit 11. Percentage of students scoring at proficient or advanced levels on English CSTs, by site, 2007–08—Continued

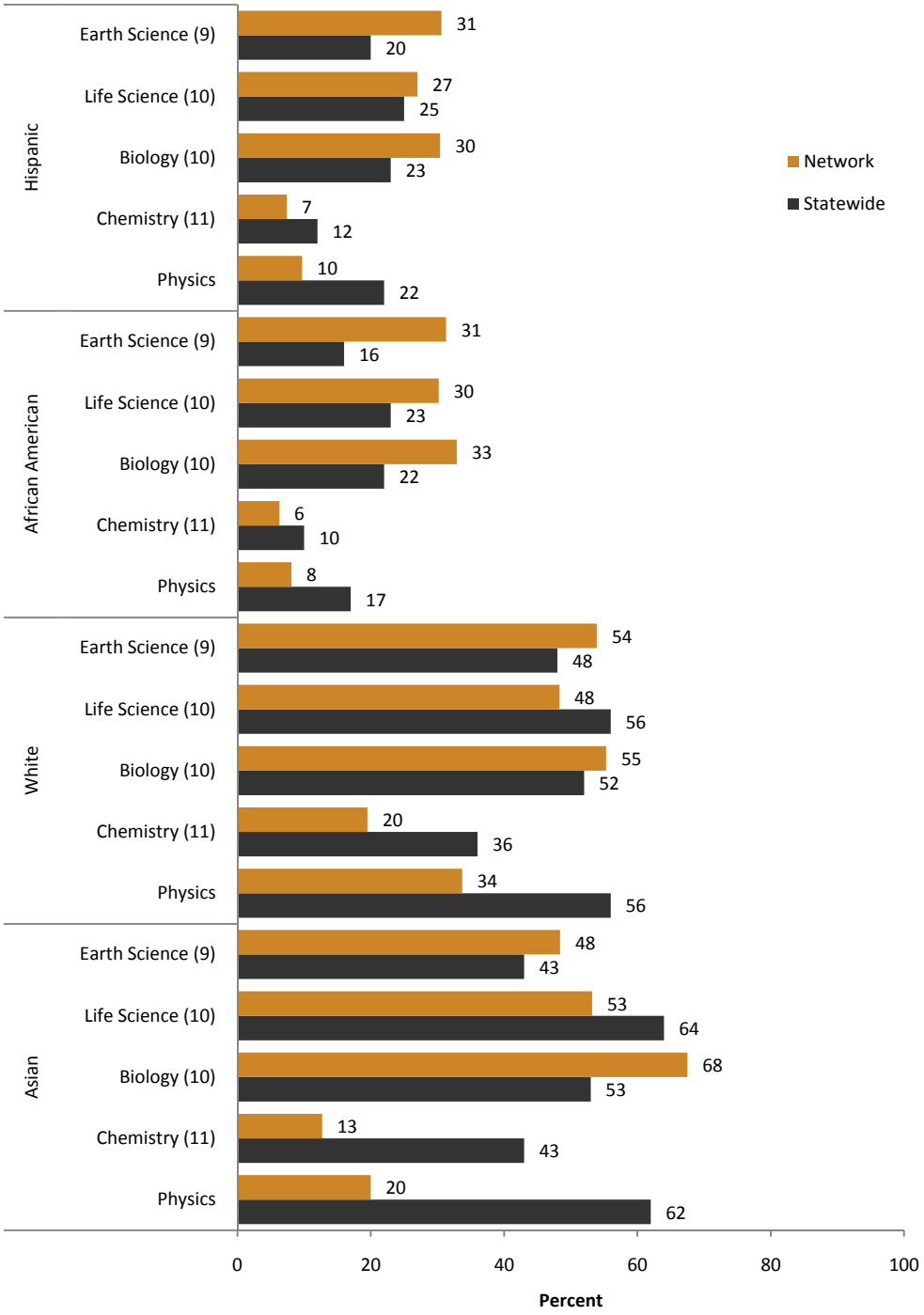


— Not available.
‡ Data were suppressed. (Too few cases for a reliable estimate.)

Science Proficiency

Network and statewide student performance rates on the science CSTs were similar (within 5 percentage points) for biology, earth science, and life science (38 versus 42 percent, 34 versus 29 percent, and 35 versus 40 percent, respectively, reaching the proficient or advanced levels) (see Appendix D). When disaggregated by race/ethnicity and grade level, differences between students at Network sites and students statewide are apparent in science, depending upon the specific subject test. For example, students of all race/ethnicities at Network sites outperformed their statewide counterparts in earth science (when taken in grade 9), with greater proportions reaching proficient or advanced levels. Hispanic and African-American students at Network sites also outperformed their statewide counterparts in life science, with greater proportions reaching proficient or advanced levels (27 versus 25 percent and 30 versus 23 percent, respectively). The same is not true for White and Asian students. Only when comparing students in grade 10 did students at Network sites outperform their state counterparts in biology. Finally, students at Network sites fared poorly in chemistry and in physics compared with their state counterparts (Exhibit 12). Not all comparisons are presented in the Exhibit; readers interested in other comparisons should review Appendix D.

Exhibit 12. Percentage of students scoring at proficient or advanced levels on science CSTs, by race/ethnicity and grade level, 2007–08



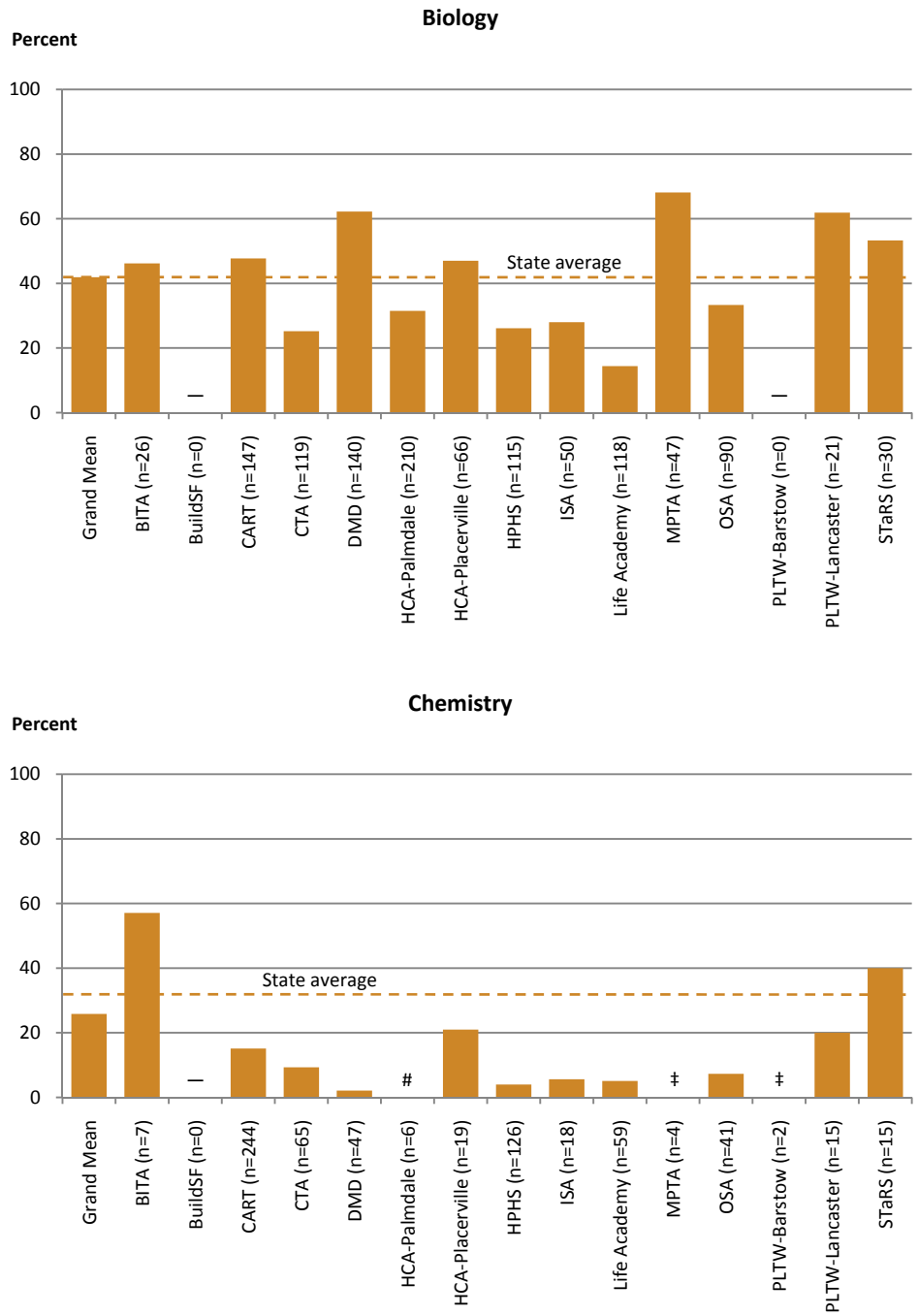
Note: Although many students took biology in grades 9 and 11, the majority of students in ConnectEd sites did so in grade 10. Only those results are presented here.

Exhibit 13 presents site-by-site results of student performance on selected science exams. As mentioned previously, the site-by-site presentation of CST proficiency levels cannot take into account differences by racial/ethnic category or by grade level because of the low numbers of students taking each test at each site. In fact, only seven sites provided CST data for earth science and nine sites provided data for life science, and eight sites provided data for physics. There are several reasons for the lack of data: a few sites do not serve grades 9 and 10, when earth science and life science CSTs are usually taken. Students typically take physics courses in grade 12, when they do not take statewide exams. We also learned from discussions with site directors that some schools and some of these sites are not offering physics at all. Although Exhibit 13 presents site-by-site results for biology and chemistry, these averages should be interpreted with caution because of the low numbers of students taking each exam in several of the sites.

For the biology CST, seven of 15 sites had higher proportions of students reaching a proficient or advanced level than did the state overall. For the chemistry CST, four sites had higher proportions of students reaching those proficiency levels than did the state overall. Two sites that performed quite well in biology (one in both biology and chemistry) made interesting points when asked about their results. The director from the Building Industry Technology Academy noted that the instructor makes a very conscious effort to incorporate biology and chemistry, working with the chemistry teacher, for example, to incorporate content related to polymers and similar topics. The principal and coach from the School for Digital Media and Design emphasized the fact that biology is a "reading science," and they provide a lot of instructional support for students through their Strategies for Literacy Independence (SLIC) program. They believe that this support has made a difference in students' performance in biology and other areas.

Although not shown in Exhibit 13, five of seven sites outperformed the state in the earth science, and five of nine sites outperformed the state in life science CSTs; only three of seven sites did so in physics. An interesting side note on physics is that San Diego Unified School District offers a 9th-grade physics class called Active Physics. Although it is merely conceptual or exploratory in nature and not at the level of rigor of the state standards, students who take it in grade 9 are required to take the CST in physics.

Exhibit 13. Percentage of students scoring at proficient or advanced levels on selected science CSTs, by site, 2007–08



— Not available.
Rounds to zero.
‡Data were suppressed. (Too few cases for a reliable estimate.)

History Proficiency

Student performance in history, as measured by scores on the CSTs, presents a mixed picture. Hispanic and White students at Network sites outperformed their statewide counterparts in U.S. history, but not in world history. The opposite was true of African-American students at Network sites, who outperformed their counterparts in world history, but not in U.S. history. Asian students in Network sites did not perform as well as their statewide counterparts on either exam (Exhibit 14).

On the world history CST, five sites had higher proportions of students reaching proficient or advanced levels than did the state with a rate of 33 percent overall. Similarly, five sites had higher proportions of students reaching those proficiency levels on the U.S. history CST than did the state overall (Exhibit 15).

Exhibit 14. Percentage of students scoring at proficient or advanced levels on history CSTs, by race/ethnicity and grade level, 2007–08

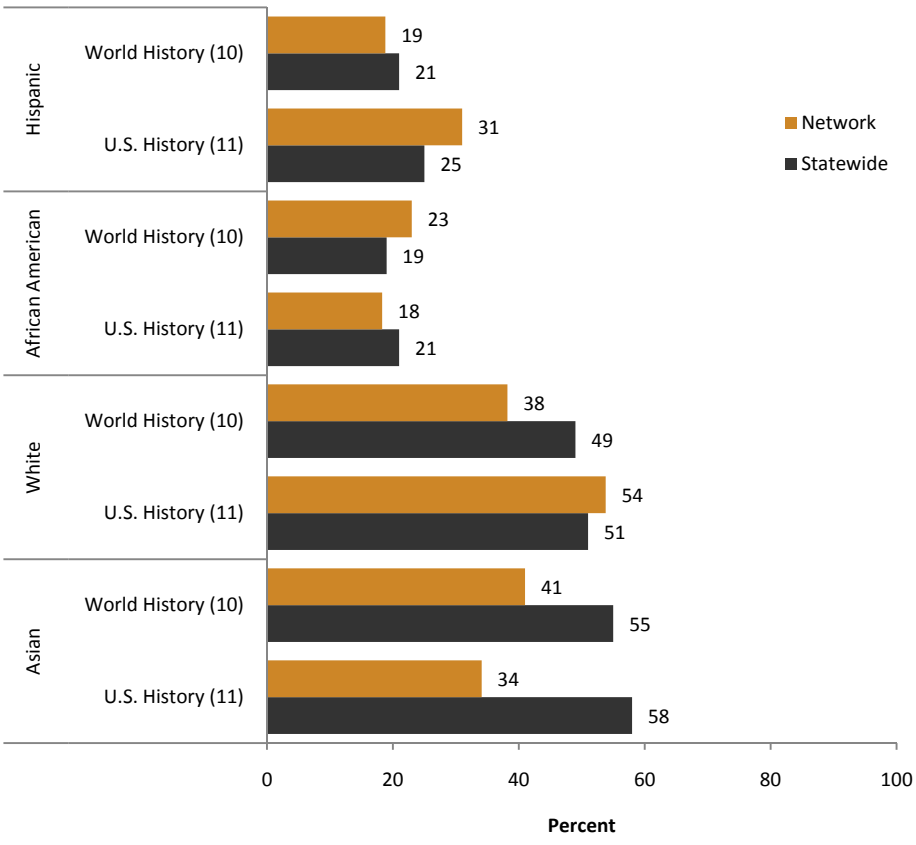
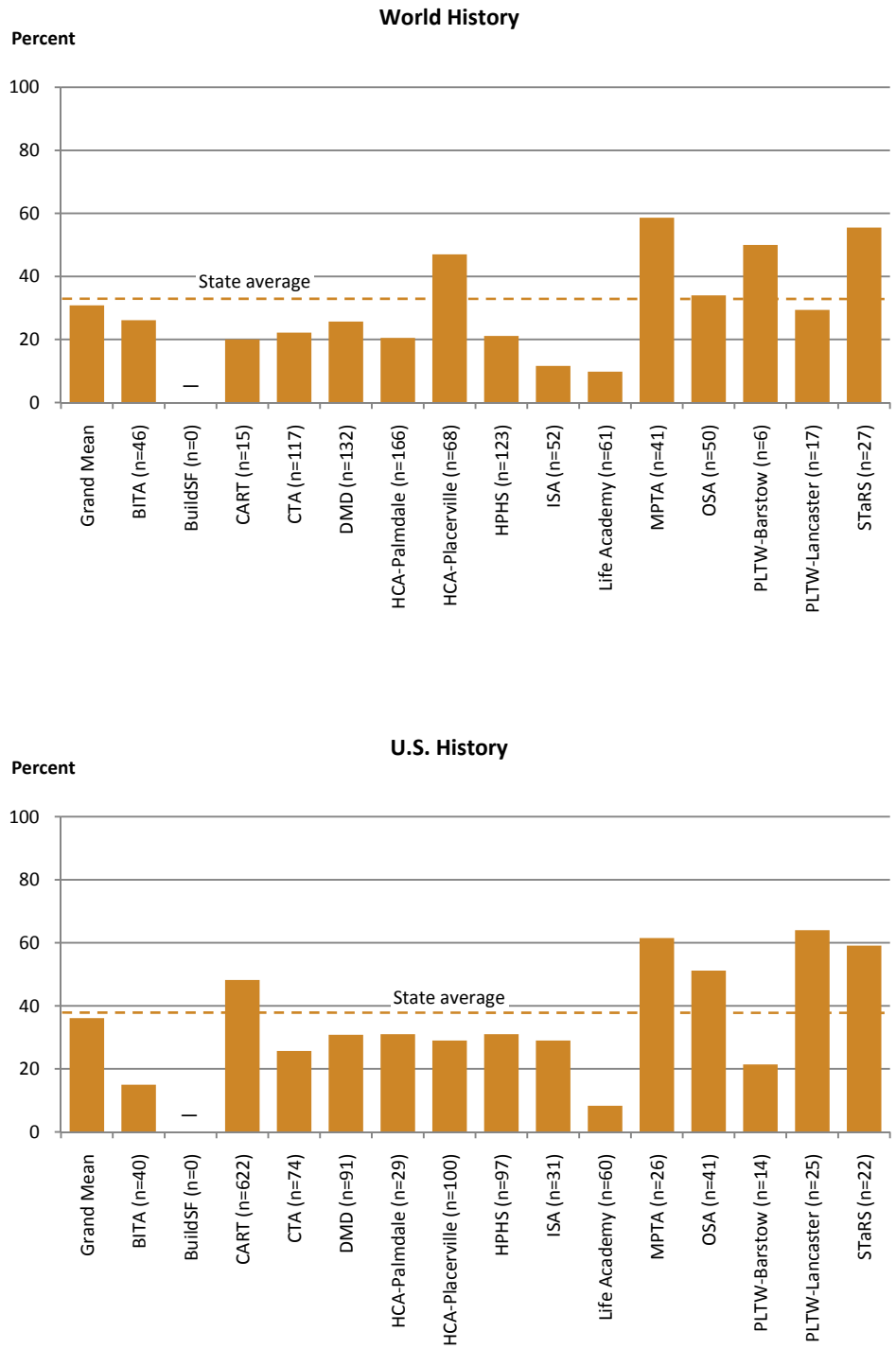


Exhibit 15. Percentage of students scoring at proficient or advanced levels on selected history CSTs, by site, 2007–08



— Not available.

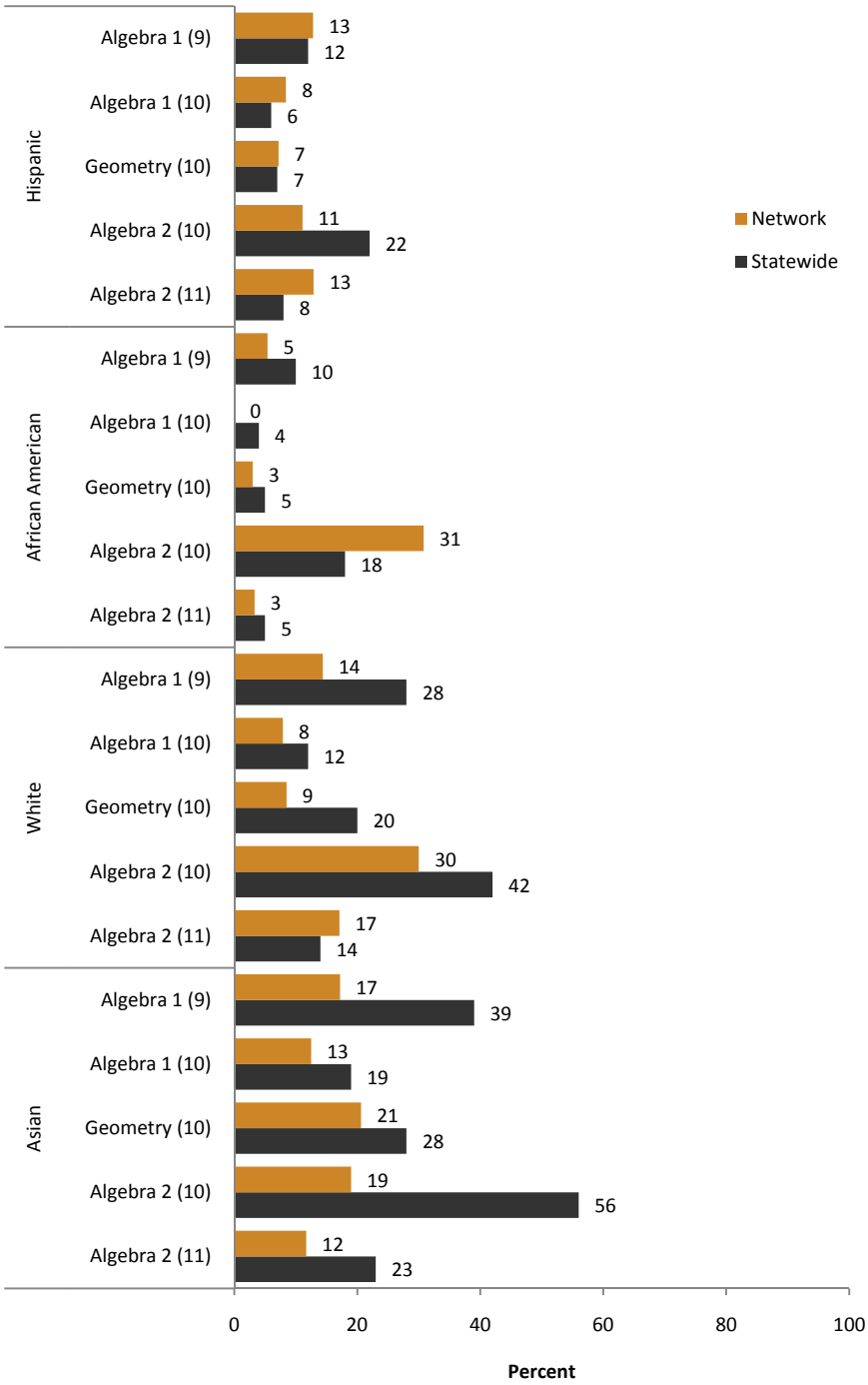
Mathematics Proficiency

Finally, it is clear that regardless of race/ethnicity and grade level, the mathematics achievement of students at Network sites leaves much to be desired, as it does statewide (Exhibit 16). Conversations throughout our visits indicated that mathematics classes are very difficult to incorporate into the pathways' integrated curriculum. Students are at many different levels when they enroll in pathways, so it is not only difficult to keep them together as a group in a mathematics class, but also difficult to include mathematics teachers in the pathway instructional team. As one administrator said, "When you're not on the team, you tend to return to using traditional approaches." Some educators felt that mathematics instruction itself was a barrier: teachers could not develop reasonable and practical applications of the mathematical concepts that students were studying in their chosen industry, or they noted that they did integrate the math that was relevant to the industry, but that was not necessarily the math reflected in the state standards.

For the algebra 1 CST, five sites had higher proportions of students reaching proficient or advanced levels than did the state overall; this number decreased to three sites for the geometry CST and remained at three sites for the algebra 2 CST. Exhibit 17 presents these results site by site; however, caution should be exercised when interpreting data from several sites, which had few students who took each exam.

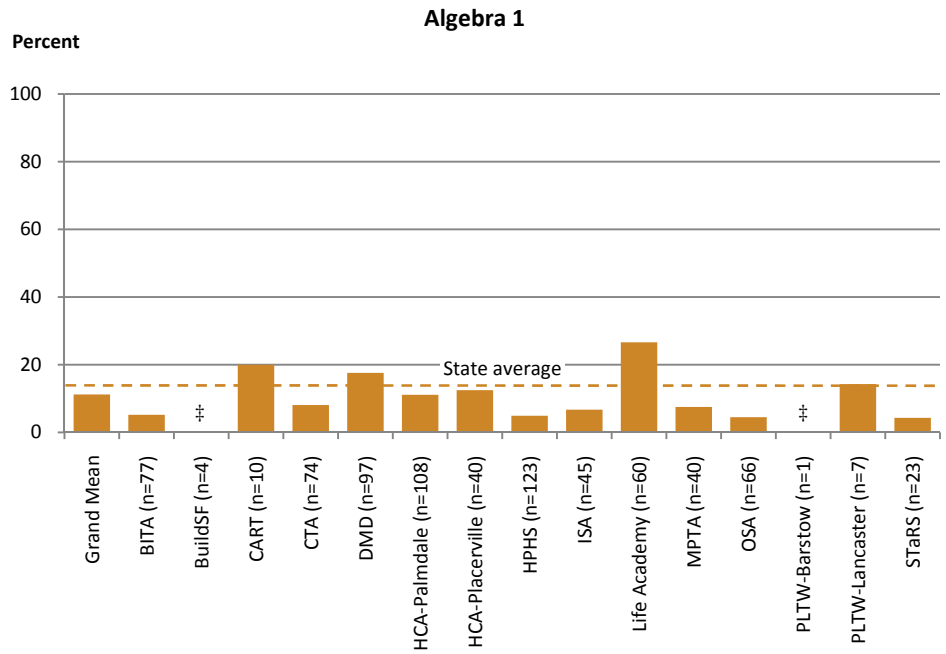
Discussions with program designers and staff revealed some interesting strategies that sites have been adopting to meet the math challenge. Recognizing that students are coming into their programs with a range of abilities, they are striving to meet the needs of students in a variety of ways. The principal at Life Academy, for example, noted that they have decided to require four years of math, so students who enter the 9th grade take algebra 1 even if they have taken it before. The principal at East San Gabriel Valley ROP reported on the implementation of a new algebra course for their students. The director at Health Career Academy–Placerville also noted that they have a first-period "math recovery class." The director at Oakland School for the Arts also reported that they have made a significant investment in math, changing their scheduling to include blocks of math. In all of these cases, they reported that they are starting to see increases in math performance, both on the CSTs and on local assessments.

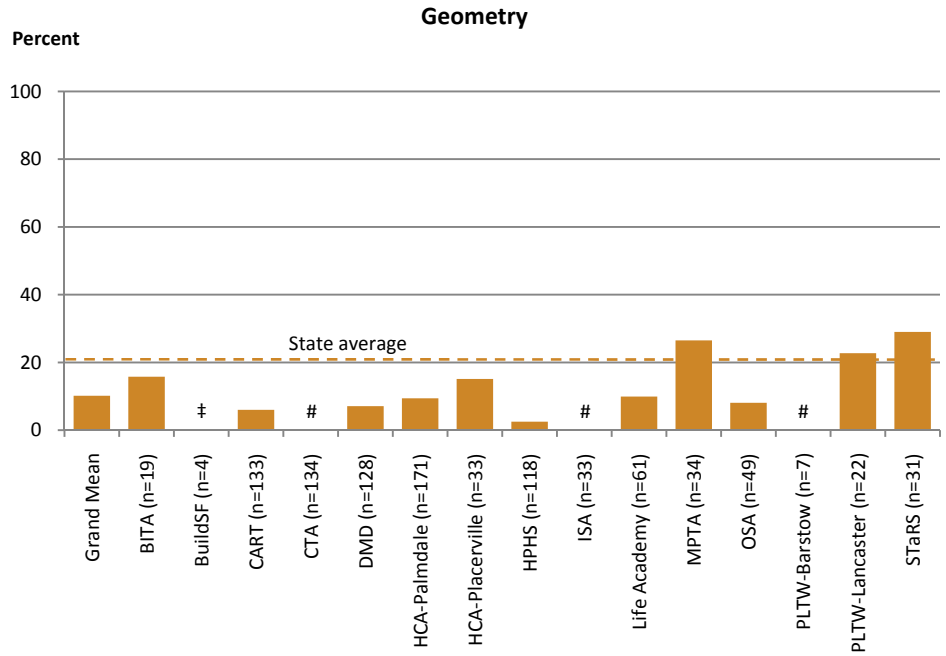
Exhibit 16. Percentage of students scoring at proficient or advanced levels on mathematics CSTs, by race/ethnicity and grade level, 2007–08



Note: Although many students took geometry in 9th and 11th grade, the majority of students in ConnectEd sites did so while in the 10th grade. Only those results are presented here.

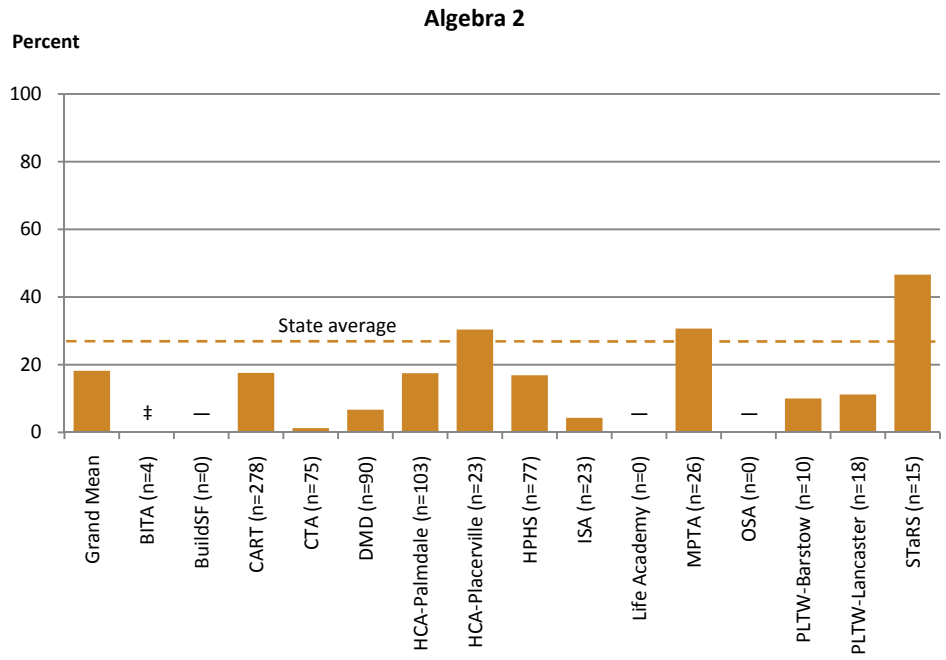
Exhibit 17. Percentage of students scoring at proficient or advanced levels on selected mathematics CSTs, by site, 2007–08





See notes at end of exhibit.

Exhibit 17. Percentage of students scoring at proficient or advanced levels on selected mathematics CSTs, by site, 2007–08—Continued



— Not available.
Rounds to zero.
‡ Data were suppressed. (Too few cases for a reliable estimate.)

Grade-to-Grade Promotion, Continuation, and Attendance Rates

Network sites provided data on whether or not their students had obtained enough credits to be on track for an on-time four-year graduation. Overall, 96 percent of 9th-graders, 90 percent of 10th-graders, and 98 percent of 11th-graders obtained the necessary credit to be promoted to the next grade and to be on-track for graduation (see Appendix D). Most sites (nine of the 13 able to provide data for all three grade levels) indicated that 100 percent of their students at all three grade levels were on-track for graduation, while promotion rates at two sites fell below 95 percent for all three grades.

Sites also provided data reflecting whether their students would continue within the pathways program over the next school year. On average, 92 percent of 9th-graders, 81 percent of 10th-graders, and 73 percent of 11th-graders expected to enroll in the same program during the 2008–09 school year. Calculating this "continuation" statistic without the Center for Advanced Research and Technology raises the overall percentage of students continuing in their multiple pathways programs from 11th to

12th grade to 90 percent. Looking at this indicator on a site level, five of the 12 sites providing data for all three grade levels predicted that 100 percent of their students would continue their enrollment in the pathways program from spring of one year to fall of the next.

The Center for Advanced Research and Technology (CART), which enrolls only 11th- and 12th-grade students from numerous schools throughout two districts, suffered from attrition between the students' junior and senior years; only 57 percent of their juniors were expected to enroll as seniors. Although juniors are welcome to continue their education at CART, the Center does not necessarily expect them to continue as seniors. In fact, for some programs (or labs), no second year exists; a student would have to select a related lab (e.g., choosing to study forensics after completing a year of law if interested in the larger field of legal studies). For other programs, a second year does exist, offering more advanced laboratory work and more independent study. CART enrolls both juniors and seniors for a one-year experience. Information Systems Academy in Antelope Valley (28, 43, and 86 percent of 9th-, 10th-, and 11th-graders, respectively, were expected to continue), Health Careers Academy–Placerville (26, 47, and 45 percent of 9th-, 10th-, and 11th-graders, respectively) and Health Careers Academy–Palmdale (96, 55, and 66 percent) also seemed to be vulnerable to students not continuing within those programs.

The overall attendance rates for Network students were quite high—just over 94 percent. By comparison to a commonly-cited national attendance rate of 92 percent, this 2 percent difference represents the equivalent of attending an additional four days of school in a 180-day school year. Network 9th- and 10th-graders averaged a 95 percent attendance rate, while 11th- and 12th-graders averaged a 94 percent attendance rate. Looking at attendance rates by site (instead of an overall rate based on all students), the 9th-grade attendance rate ranged from 92 to 98 percent, the 10th-grade rate ranged from 91 to 98 percent, the 11th-grade rate ranged from 86 to 97 percent, and the 12th-grade rate ranged from 87 to 98 percent. A few programs—especially those outside of the home high school—reported that students who generally did not want to go to their regular school program would show up for the Network pathway courses.

California does not report an overall attendance rate to use as a comparison, and we know that states that do report an average daily attendance rate (ADA) often are simply providing general headcounts, rather than a calculated ADA. But we also know that for some schools in urban areas where similar groups of students would be enrolled as are in the ConnectEd sites, the rates are often much lower.

Graduation, Eligibility for UC/CSU, and Postsecondary Plans

Of the approximately 2,300 2007–08 seniors within the Network sites, 98 percent graduated (obtaining sufficient credit and having passed the CAHSEE) (see Appendix D). In addition, 35 percent had fulfilled the UC/CSU a-g course requirements for entrance into those postsecondary systems. Without including the 1,241 seniors at East San Gabriel Valley ROP—whose students in this evaluation are seniors participating in work-based learning activities and less likely to have 4-year college plans—the percentage of seniors fulfilling a-g requirements rose to 52 percent. The latest available statistics statewide show that 36 percent of 2006–07 California seniors met the a-g requirements.

On a site-by-site basis, six of the 15 sites with seniors reported a graduation rate of 100 percent, with six additional sites reporting a rate between 95 and 99 percent (Exhibit 18)—a noteworthy finding when compared to the state average of 80 percent.

The fulfillment of a-g requirements is also a notable finding among this set of indicators. Four of the 15 sites indicated that 90 percent or more of their seniors who graduated had fulfilled the a-g requirements, seven show a fulfillment rate greater than 50 percent, and 10 of 15 have a rate greater than 44 percent. Five sites reported fulfillment rates of 30 percent or less. Some of the five sites that had rates lower than the state average include populations that are much less likely to complete a-g requirements (Exhibit 19). The overall site average—the mean of the 15 sites' averages, instead of the mean of 2,300 students across sites—was 54 percent. This is quite a bit higher than the state average of 36 percent.

We discussed reasons for the high rates of fulfilling the a-g requirements with those sites having such results. Staff at each of these sites indicated that they had paid serious attention to the need for students to complete such courses, including it in the design of their program to make sure the majority of their courses met a-g requirements. One site also noted that staff monitored student course taking quite carefully, serving as counselors to the students and making sure they were scheduled for the classes they needed to fulfill these requirements, even keeping in touch over the summer to make sure that was the case. Another site, free to set its own graduation requirements, set those requirements so that they matched the requirements for UC/CSU eligibility. At the other end of the spectrum, one of the sites with a low percentage of students meeting UC/CSU requirements stated that they attracted and served a large proportion of students with special education needs; although they served these students well in getting them to graduate, getting them prepared for admission to UC/CSU institutions was a greater challenge.

Exhibit 18. Percentage of graduating seniors, by site, 2007–08

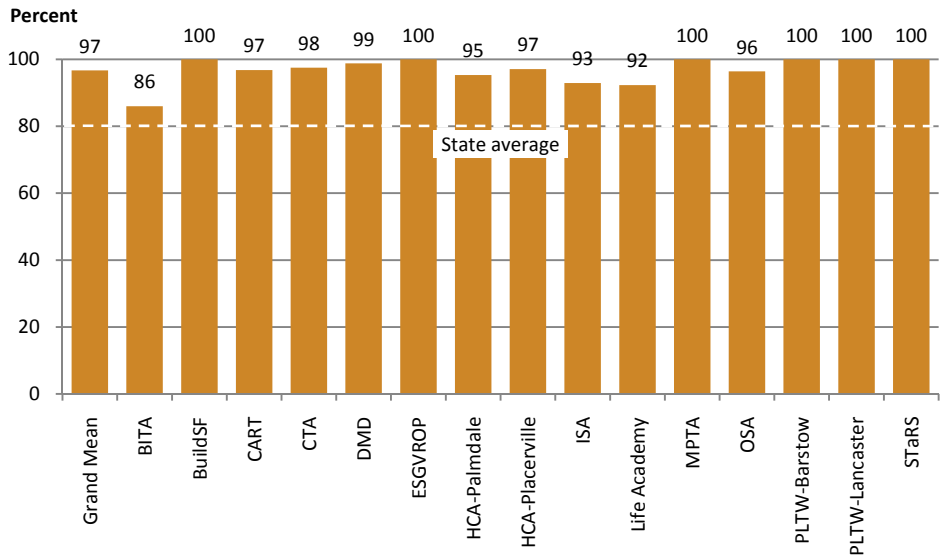
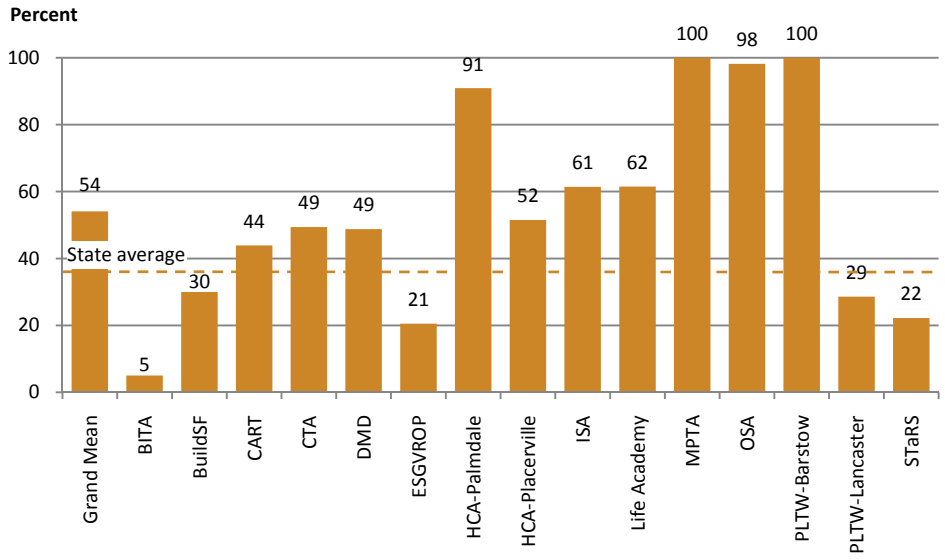


Exhibit 19. Percentage of graduating seniors meeting a-g requirements, by site, 2007–08



Among the seniors within the nine Network sites able to provide information regarding their seniors' plans after graduation, 38 percent planned to attend a 4-year college and 49 percent planned to attend a 2-year college (see Appendix D). Five percent planned to enter military service, 4 percent intended to go directly into the labor force, and 3 percent reported plans to enroll in an apprenticeship or technical training program.

Site-to-Setting Comparisons

In addition to comparing students within the Network sites to their statewide counterparts, we also compared participating students at each site to other student groups. Students from programs located within a larger school (Building Industry Technology Academy, Health Careers Academy–Placerville, Health Careers Academy–Palmdale, Information Systems Academy, Manufacturing Production Technology Academy, Project Lead the Way–Barstow, Project Lead the Way–Lancaster, and Space, Technology, and Robotic Systems Academy) were compared on a site-by-site basis to students within their home high schools. Other sites, being whole schools themselves or drawing from numerous schools (Center for Advanced Research and Technology, Construction Tech Academy, Digital Media Design, Health Professions High School, Life Academy, and Oakland School for the Arts), were compared to their districts. East San Gabriel Valley ROP was not included in this set of comparisons, as their seniors come from seven different districts and, being seniors, did not take the CSTs in 2007–08. Build SF is not included in comparisons of CAHSEE and CST scores because the very low number of students in the program makes their statistics unreliable.

Our first set of site-to-setting comparisons explored whether the students taking advantage of the multiple pathways approach were similar to students in the surrounding environments. We examined race/ethnicity of their students (condensed for this examination to White and non-White) and 9th-grade English CSTs for their "entering" classes. Student composition at five of the sites was similar to the comparison groups' composition, nine sites had proportionately more White students than their surrounding comparison groups, and one program enrolled proportionally more non-White students than their comparison groups. Note that these differences can still be small, but represent differences of at least 5 percentage points. On the English 9 CST, students at five of the sites outperformed their counterparts (meaning that a greater percentage of the Network students reached proficiency or above than did students in the comparison group). Student

performance at three sites was similar to the comparison groups' performance, and students at three sites fared less well than their counterparts.[2] Of the five sites where entering Network students outperformed the comparison groups, four were programs within a home high school and had proportionally more White students than their comparison groups (Exhibit 20).

Our second set of site-to-setting comparisons involved student performance on the CAHSEE and CSTs. Although we would have liked to have disaggregated these site comparisons by race/ethnicity and grade level, as we did for the previous sections on student test performance, the number of students at each site taking each exam did not support reliable disaggregated statistics. So, the following discussion is based on all program students at each site taking each CST, compared to their identified school or district counterparts. Again, the differences may be small but are at least 5 percentage points or more.

With one exception, all of the Network sites enrolling 10th-graders had similar or higher 10th-grade CAHSEE pass rates on both the English and mathematics sections than their school or district counterparts. Of the 12 sites with sufficient numbers of students taking the English CSTs to make comparisons, five outperformed their schools or districts on at least two of the three exams, and four performed just as well as their counterparts. Three did not perform as well, having lower proportions of students reaching proficiency or above on at least two of the three exams.

On the four mathematics CSTs (algebra 1, geometry, algebra 2, and summative mathematics), only two sites performed better than their comparison groups on at least two of the tests; six sites performed less well than their counterparts on at least two of the tests.

Performance on the five science CSTs (biology, chemistry, physics, earth science, and life science) is a bit difficult to assess, because not all tests are taken. However, students at three sites outperformed their counterparts on three of the five exams, while students at three sites underperformed their counterparts.

The remaining sites present a mixed picture. Students at five sites performed better than their counterparts on world history, while students at three sites performed less well than their counterparts. In U.S. history, however, students at four Network sites performed better than their comparison counterparts, while in six sites they performed less well than their counterparts.

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[2] Some sites are not included in this comparison either because they do not enroll 9th-graders, because the number of students was too small, or because they did not have data.

Looking across a single row of Exhibit 20 provides a sense of how a single site compares to its school or district counterpart. Using the fifth row—the School of Digital Media and Design (DMD)—as an example, the second column indicates that we are comparing DMD to its surrounding district. The double-headed arrows in the next two columns indicate that DMD's student body is similar to the district in terms of race/ethnicity (White versus non-White students) and in terms of 9th-graders' performance on the English 9 CST. DMD students performed better than their counterparts on the English/language arts portion of the CAHSEE and similarly on the mathematics portion (in the 10th grade). The symbols in the English CSTs column indicate that DMD's students perform similarly to district students on the English 9 and 10 CSTs, and outperform their counterparts on the English 11 CST. Continuing on, the mathematics CST column presents the mathematics CSTs in their typical order: algebra 1, geometry, algebra 2, and summative mathematics. DMD students perform less well than their district counterparts in all but algebra 1. Continuing on to the science CSTs column, DMD students performed better than their counterparts in biology and less well in chemistry. Too few DMD students took the chemistry CST to make a comparison. DMD students performed better than their district counterparts on the earth and life science CSTs. They did less well than their counterparts in both world and U.S. history. DMD students outperformed their district counterparts in both graduation rate and the proportion of students graduating having fulfilled a-g course requirements. Finally, the last column indicates that the number of students served at DMD totaled 421 in 2007–08.

Typically, student performance in a pathways program is better than that of their comparison group on some indicators and worse on others. However, four sites (Project Lead the Way–Barstow, Project Lead the Way–Lancaster, Manufacturing Production Technology Academy, and Space, Technology, and Robotic Systems Academy) consistently performed as well as or better than their school counterparts.

Exhibit 20. Site-to-school or site-to-district comparisons, by site, 2007–08

Site program:	compared to…	Race (White vs. non-White)	English 9 CST	10th grade CAHSEE	English CSTs	Mathematics CSTs	Science CSTs	History CSTs	Graduation and a-g fulfillment[1]	Number of students in 2008
BITA	school	>	▼	↔▼	▼▼▼	↔▼≈≈	▲≈≈▼▼	↔▼	↔▼	155
BuildSF	district	↔	—	—	—	—	—	—	↔▼	19
CART[2]	2 districts	> / >	—	—	≈ ≈↔ / ≈ ≈▲	≈▼▼▼ / ≈▼▼▼	▼▼▼≈ ≈/ ▲▼▼≈ ≈	≈▼ / ≈▲	▲▼ / ▲↔	1195
CTA	district	<	▼	↔▲	▼↔▼	↔▼▼▼	▼▼▼≈ ≈	▼▼	▲▲	448
DMD	district	↔	↔	▲↔	↔↔▲	▲▼▼▼	▲▼≈▲▲	▼▼	▲▲	421
ESGVROP	—	—	—	—	—	—	—	—	—	1241
HCA-Placerville	school	>	↔	↔↔	↔▼▼	▼▼↔≈	▼▼≈▼↔	↔▼	▲▲	164
HCA-Palmdale	school	↔	▲	▲▲	▲▲▲	↔↔▲▲	▲≈ ≈ ≈↔	▲▼	▲▲	486
HPHS	district	↔	▼	▲↔	▼↔↔	▼▼▼▼	▼▼▼≈▼	▼↔	—	400
ISA	school	>	▲	▲▲	▲↔↔	↔↔↔≈	▲↔≈▲≈	↔↔	▲▲	167
Life Academy	district	↔	↔	▲▲	↔↔▼	▲↔≈▼	▼▼≈ ≈▲	↔▼	▲▲	239
MPTA	school	>	↔	▲▲	↔▲▲	▼▲▼↔	▲▲▼▲▲	▲▲	▲▲	147
OSA	district	>	▲	▲▲	▲▲▲	↔↔≈▼	▲▼≈ ≈▲	▲▲	▲▲	194
PLTW-Barstow	school	>	≈	▲▲	≈ ≈▲	≈ ≈↔≈	≈ ≈↔≈ ≈	≈↔	▲▲	49
PLTW-Lancaster	school	>	▲	▲▲	▲▲▲	≈▲↔≈	▲↔≈ ≈ ≈	▲▲	▲↔	67
STaRS	school	>	▲	▲▲	▲▲▲	↔▲▲≈	▲▲≈▲▲	▲▲	▲↔	109

[1] School and district graduation and fulfillment rates are from the 2006–07 school year; rates for 2007–08 are not available as of January 15, 2009.

[2] CART has two sets of symbols for each indicator; CART students from Fresno were compared to students within the Fresno Unified School District, while CART students from Clovis were compared to students within the Clovis Unified School District.

Legend:

> (right-facing arrow): proportionally more White students—by at least 5 percentage points—than comparison group.

< (left-facing arrow): proportionally fewer White students—by at least 5 percentage points—than comparison group.

↔ (horizontal arrow): similar to comparison group.

▲ (up-pointing triangle): performing better—by at least 5 percentage points—than comparison group.

▼ (down-pointing triangle): performing less well—by at least 5 percentage points—than comparison group.

≈ (wavy lines): no comparison made because of no or low number of students.

Caveats

It is important to acknowledge with all the data presented here on achievement indicators that there are serious limitations to the conclusions that one can draw because of the lack of appropriate benchmarks. The comparisons that one can make each present their own set of dilemmas. Perhaps most importantly, it is critical to acknowledge that the number of students associated with each outcome indicator (whether overall or by site) affects the averages that are calculated. We have tried not to either overstate or understate the results and to emphasize the point that they seem

indicative of positive outcomes for this approach and clearly express the need for continued research.

Results on Student Outcomes from Qualitative Data

Student Attitudes

Students and teachers at Network sites believed that the attitudes of students had changed for the better. These changes cannot be wholly ascribed to pathways and their effect on students, but many felt that the personalization, focus, and "future viewpoint" of the multiple pathways programs had much to do with student growth. Students choose to be in these programs and, after exposure to several options, choose their specialties. Because their future is of their own making, they are motivated and interested in the material, the lessons, and their performance. A few students said that the freedom to make choices and the trust in their ability to make good decisions resulted in recognition by teachers that they were responsible in following through on assignments without constant instruction. In the few cases where some type of certification is available, students felt special as a result of receiving that certification. One student who had received CPR certification gave CPR to a gentleman who had been shot in his neighborhood, keeping him alive until the paramedics showed up on the scene. Even those without such heroic stories to relate have grown in ways that are impressive. Most of the people we talked to saw growth: the students were friendlier to one another, less likely to argue and fight as a result of the close-knit community they had developed, more likely to work well together and pull their own weight, more confident, and more likely to feel empowered by their intellect and skill. As one instructor put it, "Students believe in themselves and have self-confidence; they have a different attitude about their place in the world. Instead of squashing creativity and individual thinking, we allow and even encourage it. The kids know they have a voice and that they are capable of changing things they don't agree with." The students themselves acknowledge what a difference these programs have made; many are able to compare their experiences with those of their peers in their neighborhoods or in the "rest" of the school. One young woman told us, "This school changed our lives. It matures you. It focuses you on staying in school."

Behaviors and Skills

The changes in attitude carry over into changes in behavior and attainment of skills that will serve students well after high school graduation. Instructors and students mostly mentioned that students discovered the industry area in which they wanted to focus; that students found a reason to care—about others, about their work, and about their own future—and an ability and willingness to act upon that discovery. An instructor at one of the health pathways programs said, "Kids in the Academy carry themselves differently. Once they put on their green scrubs, there's a different level of professionalism and respect." For some students with a home high school, the pathway program is a totally different experience than what they encounter at their home school. Whoever they are perceived to be in that school, the cliques they belong to, the groups they join—that baggage does not follow them into the pathways program. Sometimes, their "pathways persona" follows them back. For example, in one program, students wear the uniform required by the pathway program when they return to their regular high school.

Most pathways programs strive explicitly to teach skills students need to succeed in the 21st-century workplace. Presentation skills, of both content and self and in both formal and informal settings, seemed to be emphasized. Certainly, in our visits and interviews with students, we found pathways students to be confident, well spoken, and able to voice their opinions in a reasoned manner. Besides reinforcing academic competency and technical skill, many pathways assignments are designed to build presentation, teamwork, research, problem-solving, processing, and time management skills. Several Network pathways required a capstone presentation at the end of each year, with different (and increasingly wider) public audiences. Good measurement of these skills, however, remains elusive.

Awareness of Career Options

Most—but not all—Network sites involve students in off-site work-based learning experiences, ranging from periodic job shadows to long-term internships. Students learn about the variety of opportunities within industry areas, and these experiences sometimes confirm and challenge their expectations and future employment goals. All the students we spoke with enjoyed these opportunities to be in the field and understood the experience they were gaining. One student said, "Some people go into trades not knowing what's involved; we know, by just being high school students in this program what to expect—we have a head start on others." Students in internships (as opposed to job shadows) learn how to use the latest tools of the trade as well; although few pathways programs have the latest equipment for their

field, generally the businesses in which students work have more up-to-date equipment, tools, and computer programs.

The extent to which industry professionals are involved in on-site experiences varies widely throughout the Network sites. Some teachers are reluctant to give up class time for speakers from a college or business, while others encourage community professionals to visit their sites, talk, and answer students' questions. A few teachers, scattered throughout the Network, involve professionals in instruction, such as a hospital administrator exposing students to the Health Insurance Portability and Accountability Act (HIPAA) guidelines and requirements.

Workplace Readiness

Awareness of career options and the building of career skills, such as communication, teamwork, and problem-solving, are included thoughtfully in the curriculum, as the Network sites strive to prepare students for both college and career. Certainly, students learn the necessary skills of the industry: the vocabulary and jargon, how to use tools and equipment, relevant safety issues, techniques required of employees, and technologies used. Beyond those specifics—which vary according to the industry involved—more general workplace skills are also taught and emphasized.

Many of the physical facilities are set up to emulate professional settings, whether a medical office, a laboratory, or a design studio. Students dress professionally for class presentations, talk about professionalism in class, and generally are informed of the expectations that adult professionals will have of them. The relationships between teachers and students, although personal, also take on a professional tone, with students given responsibility for completing work, asking questions, and exhibiting appropriate behavior.

These factors pay off as students go to actual workplaces for their job shadows or internships. One industry partner described the program he worked with as "phenomenal," noting that the students have the appropriate background and some training, and that "they're good kids who work hard and learn a lot." He compared them favorably to older interns from other programs, particularly with respect to their motivation.

As the students prepare for and complete workplace experiences, many extend their goal from high school graduation to pursuing further education. As one staff member put it, "The program gives kids some hope and motivation for college. Kids come in with no real hope for the future, no interests, thinking how they don't know how to do anything, and this teaches them real skills and shows them they can succeed." A few pathways match students with mentors (Space, Technology, and Robotic Systems Academy; Center for Advanced Research and Technology; Manufacturing

Production Technology Academy), either connected to or separate from their work-based learning experiences. These mentors expose students to the world beyond school, reinforcing what students are learning in the classroom and exploring applications of educational lessons to the real world. Mentors serve not only as motivators to individual students, but also as judges of student work for the entire program. However, most of the Network sites have not instituted a coordinated, strategic mentorship program. All of these efforts—job shadows, internships, and mentorship programs—require a great deal of effort and time to make connections, coordinate schedules, and ensure the quality of students' experiences in them.

College Readiness

Along with preparing students for the workplace, the Network sites also prepare students for college—postsecondary education in all its forms. Most of the students we spoke with intended to go to college, some to 4-year universities, some to community colleges, and some to 4-year colleges via community colleges. Their postsecondary plans did not always apply to the industry that the program advocated, but the students had internalized the "college-going culture" fostered by the program personnel.

Connections made by students in their work-based learning activities also influenced their postsecondary plans. Several students indicated they had changed their educational plans as a result of changing their employment goals. For example, one student interned in radiology (after a job shadow in her junior year) and now wants to go to a 4-year college; another thought she wanted to become a flight attendant, but now is looking at the technology field. As discussed earlier, among the programs that collect information about seniors' intentions after high school graduation, 87 percent of their students reported that they intended to enroll in 2- or 4-year postsecondary institutions, while an additional 5 percent intended to go into the military and 3 percent planned to enroll in an apprenticeship or technical training program.

Most of the multiple pathways staff conveyed the idea that students did not need to go to a 4-year institution to be successful, and that the options provided by 2-year institutions were also strong. This advice helped to affirm students' options and choices, as many of the students in these pathways do not have the resources to move outside of their general geographic area. For example, of those Health Professions High School students who attended college, 40 percent went to a community college within the Sacramento Community College District upon graduation.

Findings Related to Program Implementation

What Key Program Variables Characterize the Implementation Approach at Each Site, and How Well Aligned Is Implementation with Features of Effective Multiple Pathways Programs?

To identify clearly the program variables characterizing the multiple pathways programs at each Network site, we reviewed documents from ConnectEd describing the multiple pathways approach and the sites and discussed them along with other site-related information. We then organized the information around a set of variable categories: (1) those that frame the sites: Program and Contextual Factors; and (2) and those that relate to the four components of Network sites: Curriculum—Academic and Technical, Work-Based Learning, and Support Services. For each of these variable categories, we drew information from qualitative data collected during site visits and the review of related documents. Researchers coded the data according to themes and patterns that emerged in debriefings and then summarized the findings. In addition, the research teams that visited each site discussed their findings and assigned scores for each aspect of the program represented on the ConnectEd rubric. These scores can be found in Exhibit 23 (p. 87).

Program Factors

The Network sites are characterized by a range of program factors. These include program format or structures, such as academies and autonomous schools, the number of students they serve, and the articulation and scheduling strategies they have adopted.

Program Format or Structure

The variation in structures is described below, with additional descriptive factors displayed in Exhibit 21. Program structures include the following:

Small, autonomous high schools. Autonomous schools in general have the greatest amount of flexibility in a variety of areas, including setting schedules, determining graduation requirements, designing course sequences, and budgeting. One principal

observed that structural, instructional, and cultural changes are necessary for real change to occur. In her experience, the school structure was a critical first step. Being an autonomous school allowed the staff to put in place common prep times for teachers and cohorts of students, which the principal considered necessary before they could address instructional reform. Despite their flexibility, small schools typically limit the number of career pathway options available to students, and they may struggle to provide the full complement of advanced classes and extracurricular opportunities that a comprehensive high school can offer.

Academies within larger schools. At their best, academies offer students a supportive community and relevant, integrated coursework, while benefiting from the resources and diverse options of the comprehensive high school. They also face abundant challenges, among them recruiting sufficient students and teachers each year, scheduling students in cohorts, and providing teachers with time for collaboration. Many of the Network programs straddle a line between a completely developed academy and a series of CTE courses with fluid enrollment and limited integration with academic subjects.

Regional Occupation Programs. ROPs are critical partners in many of the schools and programs, but few belong to the Network themselves. ROPs have much greater latitude in programming and course offerings than schools and typically offer students at multiple high schools work-based learning opportunities, but they may struggle to provide a rigorous academic component.

Elective course sequences. The career pathways at some schools include a sequence of elective CTE classes. These programs allow all students in the school the opportunity to take the courses without sacrificing other elective opportunities. Typically there is little to no integration between technical and academic classes, nor does the program have the sense of community and long-term relationships that can develop in an academy or small school.

Outliers. Two Network schools do not fit neatly into any program structure. Build SF is a nonprofit organization that provides off-site project-based courses and an internship/mentorship program to students from 18 high schools. The Center for Advanced Research and Technology offers a half-day program to 11th- and 12th-graders in which they earn credit for English, social sciences and science, and CTE courses. Because they are distinct from students' home high schools, these programs can reach students from many schools and focus on more specific elements, such as offering high-quality work-based learning opportunities (Build SF) or well-developed

Exhibit 21. Site Matrix

ConnectEd Sites	Host/home school(s)	School District(s)	Program structure	Program focus	Approximate number of students served (2007-08)	Date of program inception
Build San Francisco San Francisco, CA	18 High Schools within San Francisco	San Francisco Unified School District	Internship/mentoring program and project-based course	Building trades and construction	19	1991
Building Industry Technology Academy Anaheim, CA	Katella High School/North Orange County ROP	Anaheim Union High School District	ROP	Building trades and construction	155	2003
Center for Advanced Research and Technology (CART) Clovis, CA	8 Local High Schools	Clovis Unified School District and Fresno Unified School District	Shared-time facility	Professional Sciences; Advanced Communications; Engineering and Product Development; and Global Issues	1,195	2000
Construction Technology Academy San Diego, CA	Stanley E. Foster Construction Technology Academy	San Diego Unified School District	Small autonomous HS	Building trades and construction	450	2002
East San Gabriel Valley Regional Occupational Program and Center West Covina, CA	15 High Schools within ROP service area	Asuza, Baldwin, Charter Oak, Covina-Valley, Gendora, West Covina, and Walnut School Districts	ROP/C	All career clusters	1,241	1970
Health Careers Academy Palmdale, CA	Palmdale High School	Antelope Valley School District	Career Academy	Health Science and Medical Technology	486	1993
Health Careers Academy Placerville, CA	El Dorado High School	El Dorado Union High School District	California Partnership Academy	Health Science and Medical Technology	164	1992
Health Professions High School Sacramento, CA	Arthur A. Benjamin Health Professions High School	Sacramento City Unified School District	Small autonomous HS	Health Science and Medical Technology	400	2005
Information Systems Academy Lancaster, CA	Antelope Valley High School	Antelope Valley Union High School District	Career Academy	Information Technology	167	2005
Laguna Creek Manufacturing Production Technology Academy (MPTA) Elk Grove, CA	Laguna Creek High School	Elk Grove Unified School District	California Partnership Academy	Manufacturing and Product Development	147	1994
Life Academy of Health and Bioscience Oakland, CA	Life Academy of Health and Bioscience	Oakland Unified School District	Small autonomous HS; California Partnership Academy	Health Science and Medical Technology	239	1994

Exhibit 21. Site Matrix (continued)

ConnectEd Sites	Host/home school(s)	School District(s)	Program structure	Program focus	Approximate number of students served (2007-08)	Date of program inception
Oakland School for the Arts Oakland, CA	Oakland School for the Arts	Oakland Unified School District	Small autonomous HS	Arts, Media, and Entertainment	194	2002
Project Lead the Way Pre-Engineering Academy Barstow, CA	Barstow High School	Barstow Unified School District	Course sequence	Engineering and Design	49	2006
Project Lead the Way Pre-Engineering Program Lancaster, CA	Lancaster High School	Antelope Valley Union High School District	Course sequence	Engineering and Design	67	2002
School of Digital Media and Design (DMD) San Diego, CA	School of Digital Media and Design	San Diego Unified School District	Small autonomous HS	Arts, Media, and Entertainment	421	2002
Space, Technology, and Robotic Systems Academy Lompoc, CA	Lompoc High School	Lompoc Unified School District	California Partnership Academy	Engineering, Robotics	109	2001

learning labs that integrate CTE with a few academic subjects (Center for Advanced Research and Technology). Coordinating with home high schools on such issues as attendance records, scheduling, and transportation can be challenging.

Articulation between Schools and with Postsecondary Institutions

Coordination between Network Schools and Home High Schools

In some cases, the Network site exists as a stand-alone school providing a full complement of educational services to its students. But, in several cases, students divide their time between the Network school and their home high school. Part of this evaluation, therefore, focused on whether and how these types of schools coordinated the logistical and educational experiences of their students. Not surprisingly, we found great variation among sites. Staff at some sites felt they were in close communication with students' home high schools on a range of issues, while in other programs, they felt that they operated independently and did not communicate frequently with students' regular schools.

Staff and students mentioned curriculum as an area in which school sites coordinate. Given the goal of integrated curriculum, it would seem that communication between school sites where students divide their days would be a necessity. Administrators at one site explained that their program exists because several local districts came together to offer more algebra courses. At another site, a student described how the business course he was taking at the ROP center was closely related to the business algebra course he was taking at his home high school, suggesting that coordination exists between sites. A principal at another site said that district and school leaders would like more collaboration between the high school and the Network site in integrating the curriculum and district-level leaders encourage such cooperation.

Another reported focus of collaboration is counseling. Some Network schools have their own counselors, while others rely on the home high school to assist students in college and career planning. In some instances, students have counselors available to them at both sites. Illustrating the need for coordination between sites, one counselor described himself as the "go-between" for tracking students' paperwork relating to scheduling, attendance, and college applications.

Among those who reported that they regularly confer with students' home high schools, one common issue is tracking attendance. When students spend their school days at more than one site, it can be difficult to track absences and truancy. Some administrators noted that the schools' data systems have not been linked, making sharing such attendance information difficult. For example, at the Center for Advanced Research and Technology, students from 15 feeder high schools in two districts spend half of every school day on the campus. Administrators there noted

that it can be a challenge to coordinate accurate attendance taking under these circumstances and that good communication between sites is critically important.

Finally, recruitment presents another opportunity for collaboration. Some Network programs use the comprehensive high schools as a forum to publicize their programs and recruit students, requiring cooperation from leaders of both schools. Administrators at one Network school described how staff at the home high school were initially reluctant to promote the Network program because they feared losing students. They went on to say that regular communication between staff has fostered greater understanding and that the recruitment process has subsequently improved.

Articulation between Network Schools and Postsecondary Institutions

Many Network schools commonly collaborate with local and regional postsecondary institutions. Through both formal articulation agreements and informal cooperation, quite a few schools have worked to build relationships with the community colleges and universities serving their communities. In general, school staff and students described the benefits of these types of collaborative relationships, though some have also experienced impediments.

The most common arrangement between Network schools and postsecondary institutions is dual-credit courses. This practice allows students to take courses providing credit toward both their high school diploma and associate's or bachelor's degrees. In some cases, the college or university has approved courses at the Network school for credit toward a higher degree. For instance, at Health Professions High School, students can take a biology course recognized by both the high school and Sacramento City College. In other cases, students can take courses on the college campus and apply the credit toward their high school diploma. In one such instance, students at Project Lead the Way can take mechanical engineering at the Lancaster University Center for dual credit. A majority of the programs provide a dual-credit option whereby students receive both high school and community college credit for courses they take.

Postsecondary articulation and cooperation manifests itself in several other ways. Some Network schools have arranged with local postsecondary institutions to offer students free or reduced tuition. For example, at the School for Digital Media and Design (DMD) in San Diego, students who meet the degree requirements for their high school diploma in the fall of their senior year can take courses for free at the adjacent Mesa Community College in the spring. Some colleges and universities, such as City College of San Francisco (CCSF), allow graduates of Network schools to skip introductory-level courses because they have taken comparable courses in high school. For example, CCSF allows graduates of Build SF to skip Introduction to Architecture when they begin their college coursework. Finally, a few programs

reported that local colleges and universities provided students with work-based learning opportunities, including internships, jobs, and mentoring by faculty and industry professionals.

College and university faculty and students also are involved in developing some Network programs. More than one site reported that college faculty collaborate with staff at their school on program design, curriculum, and student projects. And at least one Network school has recruited local university students to serve as tutors. Staff at sites with these types of collaboration cite them as additional benefits of articulation.

Network staff generally agree that articulation and collaboration with postsecondary institutions provide benefits to students. Perhaps the most obvious benefit is that students can start earning credit toward a postsecondary degree or certification before graduation from high school, which translates into time and money saved. Many students and staff also believe that student coursetaking at the college level helps prepare them academically for educational pursuits after high school. Some Network faculty and staff believe that the collegiate experiences help them identify those students who need remediation before leaving high school and allow schools to start offering support services early. Several also noted that students got a taste of the organizational and study skills they would need as college students, as a result of this type of coursetaking during high school.

Despite generally positive feedback about postsecondary articulation, some Network sites have encountered challenges in this area. Staff from more than one site reported that local community colleges and universities have been resistant to offering dual-credit courses to Network students. Some suggested this might be related to funding, as secondary schools want to maximize their average daily attendance (ADA) allocation from the state, and colleges want to maintain high numbers of full-time equivalent (FTE) students. In other cases, informal agreements and cooperation exist between Network schools and colleges, but formalizing these agreements has been slow. Finally, some educators expressed concern that some students are not prepared academically or otherwise to take college-level courses and that struggling or failing in college-level courses might be detrimental to those students' academic futures.

Scheduling

Teachers in one focus group called scheduling "a balancing act," and that view seems to hold for most Network schools. No single program structure seemed to be a particular advantage in scheduling. Some small schools reported no trouble with scheduling, while others struggled to fit students into appropriate classes. Some academies thought their cohort structure made scheduling easier, while others thought it was particularly challenging. At Network schools where scheduling had

been problematic, teachers and administrators cited two main issues: teacher assignments and student access to specific classes.

Sometimes the master schedule does not support a full-time teacher in a particular subject, such as advanced science, so teachers must be willing and hold the correct credential to teach other subjects as well. Some sites also strive to provide teachers with common planning and collaboration time, which can be difficult to fit into the schedule and balance with teacher assignments. Autonomous schools that can set their own schedule and programs external to schools, such as the Center for Advanced Research and Technology, tend to be best at incorporating common planning time into the master schedule.

Meshing graduation requirements, electives, and advanced courses with a career pathway has been a challenge for several Network schools. Lancaster's Project Lead the Way program, for example, struggles to recruit freshmen and sophomores, who only have a single elective slot in their schedules. The Information Systems Academy has trouble enrolling freshmen who must take remediation classes that conflict with the Academy's schedule. At several sites, students must choose among pathways courses, AP courses, the Advancement via Individual Determination (AVID) program, and recommended a-g courses, such as more advanced levels of foreign language or mathematics. Some schools allow students to satisfy requirements such as PE during the summer or before school to make room in their schedules for pathways classes.

A few Network schools have built an advisory period into their schedules. At the Construction Technology Academy, advisory teachers implement much of the program's integrated, project-based curriculum. At Life Academy of Health and Bioscience, students have the same advisory teacher throughout all four years, permitting long-term relationships with those teachers. A teacher committee creates the advisory curriculum, which includes two days of sustained silent reading, one day of study hall, and one day of community building and discussion (there is no advisory on the fifth day, when teachers have time for professional development). Space, Technology, and Robotic Systems Academy students at Lompoc High do not have a distinct advisory period, but they are assigned to an advisory teacher for all four years. These students have monthly lunch meetings with this teacher to discuss career goals and opportunities.

Contextual Factors

This section provides details about the context of each site. The factors selected are those that we believe affect how well the program is implemented and the results

obtained. These include school/district demographics, district support, leadership, planning/coordination time, parent involvement, facilities, technology, and transportation.

School and District Demographics

The socioeconomic demographics of the 16 demonstration sites vary somewhat, but all are located in low-income areas. Many sites were intentionally selected to respond to the priorities of the James Irvine Foundation, reflecting its interest in serving low-income, high-minority populations. Life Academy and Oakland School for the Arts are in very low-income neighborhoods. These two schools were created to provide low-income students with an alternative to their struggling local comprehensive high schools. Some other sites serve students from a range of socioeconomic backgrounds. Health Professions High School in Sacramento, for example, was built close to downtown so that it would be accessible for students who need to take public transit (as does 75 percent of the student body). Although this school was built next to low-income housing, the principal wanted this school to enroll students from the larger community to create a diverse environment. Other sites, such as the Building Industry Technology Academy and Health Careers Academy in Placerville, were established in schools that have long served high-poverty areas. Although site demographics vary, one common theme appears to be that these programs appeal to a wide range of students.

District Support

On the whole, staff at most sites characterized their districts as supportive of their programs. Some principals and program coordinators said that they received guidance and assistance from senior-level district leaders on a regular basis. Others said that the district has supported specific initiatives, such as transforming the program into an academy. Other evidence of district support is professional development and training in such areas as curriculum, leadership, and small learning communities. Sites that were critical of the pathways programs or felt their districts had not been supportive were few; in those cases, criticism tended to focus on a lack of understanding of the alternative approaches and structures of Network schools and inadequate resources. District support, however, did not appear to be a one-way street: staff from several programs described a dynamic in which the Network site had served as a "proving ground" for an approach, which was subsequently embraced and diffused throughout the district.

Faculty and staff also described site-level support important to their programs' success. Several sites mentioned coaching as a critical link. At the School of Digital Media and Design (DMD), for instance, some teachers serve as peer coaches, working to help implement action plans in every classroom. DMD also benefits from

federally funded literacy coaches who support students across grades and disciplines. Other types of site-level support evident in Network schools include robust advisory committees and engaged community members.

Network schools share their skills as well. The principal at one Network school, for example, serves as a coach and leadership trainer for other principals in the district. The program coordinator of another site works hard to collaborate with other small schools and academies in his district, building a professional learning community among these site leaders.

Leadership

The Network sites generally had strong leadership, sometimes from the program director and other times from the principal, but usually by those two in tandem. Using a rubric developed by ConnectEd to identify factors associated with effective multiple pathways programs (see discussion and results in Exhibit 23, p. 87), evaluators rated each site on the identified factors. A review of the rubric scores related to implementation revealed some patterns in leadership factors. On the rubric item School and Program Leadership, two sites scored a 4.0, while 11 scored a 3.0. A strong correlation exists between the score on the School and Program Leadership element and on the overall program score. Those schools scoring 4.0 on Leadership averaged an overall score of 3.2. However, those scoring 3.0 on Leadership averaged 2.5 overall and those scoring a 2.0 on Leadership had an average overall score of 1.5. This relationship suggests what should be obvious: strong leaders ensure that programs get what they need to succeed. Strong leaders find resources—additional release time for collaboration, funds for new equipment, or space for a larger lab. Leaders of innovative programs, according to one principal, need to be "entrepreneurial"—marketing the program based upon its successes and lining up support, in the community or district, for changes. Strong leaders also keep staff, faculty, and students motivated and willing to put in the long hours required to make the program successful.

During the interviews, many respondents, particularly teachers, attributed program success to ongoing and supportive leadership. Principals and district administrators change regularly at most program sites, yet this does not necessarily mean that leadership wanes. In some cases, new principals learn to support the pre-existing academy because it is embedded, which ensures continuity. In other cases, program leaders might be promoted or retire, but new program coordinators—often teachers who had been active in the program—move into leadership positions and ensure continued support.

Planning and Coordination Time

Since the task of developing and implementing integrated projects and curricula requires multiple teachers from multiple departments, all programs realize that teachers need time to work together. In the previous section on Scheduling, we noted some of the challenges that may arise in developing the master schedule—one of which is finding time for coordination and planning. While two programs were able to offer teachers a common prep period (Center for Advanced Research and Technology, Construction Technology Academy) and six had weekly teacher meetings, other programs were not able to do so. Instead, teachers worked together during buy-back days (Building Industry Technology Academy), or informally (Project Lead the Way–Barstow, Oakland School for the Arts) at lunch meetings, via e-mail, or even when carpooling. Not surprisingly, the degree of teacher collaboration and quality of integrated projects seem to be directly aligned with the regularity and ease of coordinated planning time. For example, the two schools with common prep periods scored either 3.0 or 4.0 on the rubric on Teacher Collaboration, and they averaged 3.0 on Integrated Curriculum and Instruction. The six schools with weekly meetings averaged 3.3 on Teacher Collaboration and 3.2 on Integrated Curriculum, while those schools that rely on informal meetings averaged 1.7 on Teacher Collaboration and 2.0 on Integrated Curriculum.

Parent Involvement

Although almost all sites recognize the need to involve parents, few have strong parental involvement in their program. In fact, 12 of the 16 programs scored 1.0 on this factor on the rubric. While a few parents are highly active, most are passive recipients of information. Schools usually use an online system such as PowerSchool to share grades and class information, but they rely on the parents to access the information.

At most sites, parents are very willing to attend showcase events (Digital Media and Design, Center for Advanced Research and Technology, East San Gabriel Valley ROP, Life Academy) and parent education nights, but involvement beyond this is rare, with two notable exceptions. At Health Professions High School, a parent liaison coordinator ensures that parents have ample opportunities to visit the school, view projects, learn about the classes, and provide input. Beyond a few showcase events, the liaison regularly brings parents to the school to get involved in classes. Similarly, at Manufacturing Production Technology Academy, formal events, such as mandatory parent nights, bring parents to the campus and create opportunities for parent input and feedback.

Facilities

The facilities in which the Network sites are housed influence how the programs operate. There is often a gap, however, between the designers' intent for the program and what they are able to realize. Most sites indicate that they want a facility that resembles and is equipped as a workplace. The sites have accomplished this goal to varying degrees. The Center for Advanced Research and Technology stands out as one site that had the resources to create an exceptional environment, but it cost "$30 million to build and $6 million to equip." The facility—an old pump manufacturing plant—was converted into an inviting array of 10 pods that typically combine a lab-like environment with a more traditional classroom, separated by movable walls. This particular set-up seems to facilitate the integration of instruction. The Center for Advanced Research and Technology also has the luxury of soft, cushioned chairs throughout that came from a single corporate donation.

Oakland School for the Arts, Health Professions High School, and Build SF were able to influence the design of the physical space/buildings in substantive ways. Health Professions High School began their program with a brand-new building. In January 2009, Oakland School for the Arts, which benefited from the extraordinary assistance of individuals and organizations, opened its doors to 400 students in its new home in the historic Fox Theater in Oakland. Build SF also has created a new space for its Institute.

Other sites strive to emulate workplace environments—setting them up to look like dental or medical facilities, forensic laboratories, engineering labs, construction shops, or manufacturing plants. A challenge consistent across the sites is to establish, equip, and maintain the facilities for optimum use and results.

Technology

While all sites suffer from the same challenges of maintaining up-to-date technology as other schools do, they all clearly value having and using technology as a critical component of what they seek to accomplish. Several sites make laptop computers available for all students. They understand the need for students to have access to the technology they are likely to need in the workplace. A few use tablet PCs, and some use SmartBoards (whiteboards that interact with computers) to share information. In the Space, Technology, and Robotic Systems Academy (StaRS) program, students use HAM radios and connect to many other users through something called "EchoLink." At Information Systems Academy, there are five computer labs, three of which are PC labs, and every student has a computer in each class. As software continually changes, updating the computers is very costly. Virtually all sites struggle to find the resources to update technology, and most sites are coping with aging computers and equipment.

Transportation

Whether transportation is a challenge for Network schools largely depends on the structure of the program and its location. At some schools, students do not spend much time off-campus, so transportation is not a major concern. At some sites, however, students spend a great deal of time in workplaces that are not close to the school, and working out the logistics and resources to transport students is a big task. Many older students can drive themselves or carpool to and from internships and job-shadowing sites. But students who do not have cars or licenses, or are too young to drive, need assistance.

Teachers at one program borrow school vans and drive students to their work-based learning sites. Another program devotes a full 10 percent of its budget to ensuring that students get to and from the Network site and work-based activities. The challenge does not just involve vehicles and funds. Staff from districts that are large in area mentioned that students spend a great deal of time in transit and that this is not an efficient use of their time. They noted that students might live far from the Network site and then must shuttle to a work site that is further still. One staff member suggested that these distances offer great opportunities for exploring virtual learning.

Technology Integration at Oakland School for the Arts (OSA)

Oakland School for the Arts (OSA) offers students and teachers a wealth of technology resources, which are integrated into a wide variety of school functions. All upperclassmen receive a school laptop, funded by grants from several foundations, and 9th- and 10th-grade teachers have class sets. A dedicated technology coordinator provides technical support for students and staff, as well as resources and suggestions for incorporating the tools into teacher practice. With that infrastructure and support, teachers can integrate technology into instruction and projects, assess student progress, and communicate with students, parents, and each other.

Academic teachers in many subjects have successfully incorporated technology into instruction. In some math classes, students record themselves explaining a math concept and then post that "video podcast" for others in the class, so students struggling with the concept can hear alternative explanations from their peers. In physics, students use software to design roller coasters, applying knowledge of forces such as gravity, inertia, and momentum to make them work. In economics, students produce video advertisements for a bill they propose, and in English, students film and edit adaptations of scenes from *Macbeth*.

The entire school uses a collaboration suite (FirstClass) that includes e-mail, instant messaging, and a conference function that allows students to submit their own work and offer a critique of others. Some teachers find that function especially helpful because students are reluctant to offer specific critiques of each other's work in person, especially for their art projects. Students also can send teachers audio attachments of their artistic work, such as singing or playing an instrument, or of their academic work, such as speaking in a foreign language or explaining a math concept. Teachers may use these recordings to assess students or help them track their own progress and development.

Teachers, administrators, students, and parents also use PowerSchool, a schoolwide management system, to track student information. Parents can log in to view student work, grades, and progress reports, and the system is linked with students' calendars to automatically update homework assignments and project due dates.

Curriculum and Instruction

Integration

One of the guiding principles of multiple pathways is connecting academic concepts to real-world applications, integrating challenging academics with demanding career and technical curricula. A body of literature indicates that students learn more when they are taught academic concepts in the context of relevant, real-world problems. In the postsecondary context, studies have shown that applied learning experiences, such as project- and problem-based instruction, service learning, and internships, increase engagement and retention (Wolff and Tinney 2006; Mundy and Eyler 2002). Other research shows that student achievement increases when instructors teach concepts in the context of real-world problems. A 2006 study compared the math achievement of students in CTE classes after about 40 percent of the teachers were randomly assigned to emphasize the math concepts inherent in the occupational context (Stone et al. 2006). The findings showed that students' post-test math scores were significantly higher in those classes that integrated math with CTE instruction.

In their manual for curriculum design, ConnectEd authors highlight six basic principles for a successful integrated curriculum: academic and technical rigor, authenticity, applied learning, active exploration outside the classroom, connections to adults as mentors and coaches, and performance-based assessments (Steinberg 2007). The manual also identifies key components that must be in place to implement integrated curriculum, including a supportive administration, a schedule that facilitates teacher collaboration, partnerships with industry and postsecondary institutions, and teacher commitment (Clayton, Sun Ho, and Hudis 2007). In this study, we found those components to be important predictors of the extent to which programs implemented integrated curriculum.

In practice, curriculum and instruction vary widely between and within Network schools. Examples of high-quality cross-curricular projects and units were easy to find. Health Professions High School, for example, developed a unit in which students read *Catcher in the Rye* in their English class and discussed Holden Caulfield's mental health diagnosis and brain chemistry in their science courses. At Manufacturing Production Technology Academy, we observed students using mouse-trap-powered cars they had designed and built in their CTE courses to conduct experiments in physics. Life Academy incorporates a number of cross-curricular projects for 9th- and 10th-graders. In 9th grade, students work in teams to research a disease that affects their community, such as asthma or alcoholism, calculate and graph the probability of getting that disease in their math class, and write up and present their findings to the class. In their sophomore year science,

English, and math courses, students research a type of cancer, write an original story about a character receiving the diagnosis and the development of the disease, and calculate and graph the probability of survival.

Curriculum Integration at the Center for Advanced Research and Technology (CART)

The unusual structure of the Center for Advanced Research and Technology (CART) contributes to its teachers' ability to create and implement a genuinely integrated curriculum. CART offers a half-day program to 11th- and 12th-graders in the Fresno and Clovis Unified School districts, during which time they earn a-g certified credits in English, social sciences and science, and elective CTE courses. The school is divided into 13 Learning Labs within four career clusters, and students select the lab they are interested in joining. There are no formal divisions of time, space, or teacher responsibility within each lab, so teachers may divide the classroom space, subject matter, and teaching tasks each day according to what is appropriate for students' learning.

The teachers called "teaching with a team" one of the best things about working at CART. They reported that they commonly incorporate multiple subjects when they plan lessons and assess students: all teachers read the books taught in English; they grade for grammar in science writing; and they help students complete integrated semester-long projects. In addition to an unusually flexible class structure, teachers also share a daily two-hour window between the morning and afternoon sessions, ideal for collaborating on curriculum and planning. Students reported that the integrated curriculum helps them stay motivated to learn. One student in the Law and Policy lab said that she was terrible at English, but because she had always wanted to go into law, she was actually interested in learning the necessary reading and writing skills. It is CART's unique structural features, like lab-based team teaching and daily common planning time, that promote such a high level of curriculum integration.

The Network schools able to implement these types of units and projects typically shared an administration and faculty committed to the collaboration required to build them. Teachers and principals in schools with integrated curriculum generally echoed the ConnectEd philosophy that "relevance is critical for students," as one administrator said. Another put it this way: "Stuff needs to be applied to really become internalized."

More importantly, staff at these schools did the work necessary to design and implement the curricula. Administrators set aside time in the schedule for teacher collaboration. Teachers opted to become involved, devoting time to planning during the school day, weekends, or over the summer. The 2006 study about math in CTE found that ongoing teamwork between CTE and math teachers was critical to students' mastering the math concepts inherent in their technical courses (Stone et al. 2006). One principal echoed the same point, "Their success in integrating curriculum is due to teachers on teams with other committed teachers, and when they're not on that team, teachers tend to fall back into traditional approaches."

In the absence of genuine cross-curricular units and projects, academic teachers often incorporate the CTE focus into their lessons. A math teacher reported that she "cherry-picks" word problems in her class that relate to the construction and building focus of the CTE program. In an arts and media school, students produced a video in their chemistry class to describe the polymer they were studying. In another, the teacher asked student groups to act out a scene related to a bill becoming law. He reported that he incorporates performing arts into the lessons to increase student engagement and allow students to be creative in class.

The lack of a dedicated student and teacher cohort proves to be the biggest obstacle to integrating academic and CTE instruction. Teachers and administrators at many sites talked about wanting to pursue more integration, but being hampered by the demands of the master schedule and the inability to keep pathways students in a cohort. In one school, district policy dictates that students who fail the CAHSEE must take remediation classes that remove them from the Academy cohort. Several sites have struggled to meet enrollment goals that would allow students to move together in a cohort and had to complete their class rosters with non-pathways students when those goals were not met. When pathways students are in "unpure" academic classes, it is difficult for teachers to offer specialized, CTE-relevant projects and units to pathways students. Some manage to do it, however. The CTE instructor and one or more academic teachers in a few schools partnered informally to offer the option of an occasional CTE-focused project to pathways students in regular academic classes, for example, offering engineering and robotics students at the Space, Technology, and Robotic Systems Academy the option of reading a science fiction novel in English class. In a construction-based program (Building Industry Technology Academy), a few academic teachers loosely aligned their instructional schedules with the CTE teacher so that, for example, students would learn about ancient Greece and Rome in their world history class while the construction class practiced design and building principles from those cultures. But without a student cohort, genuine curriculum integration is difficult to achieve.

The Challenge of Incorporating Math

For many Network schools, math is the class that confounds scheduling because students are placed by skill level rather than grade level: all juniors might take U.S. history, for example, but they do not all take geometry. Several program coordinators cited math as the biggest hurdle in implementing cohort scheduling. Life Academy, exercising the autonomy that small schools have, copes with the difficulty of math integration by automatically assigning all 9th-graders to algebra I, regardless of whether they have taken it before. This strategy ensures that all students have a strong foundation in algebra, and it also allows them to include a math component in their cross-curricular projects at each grade level.

Nearly every other site struggles to integrate math content into the CTE context. Math classes in Health Careers Academy–Palmdale squeeze all CTE-relevant material into just a few weeks at the end of the year. Health Careers Academy–Placerville decided to simply exclude math courses entirely, and the Center for Advanced Research and Technology also offers no math credit. In Barstow, one of the Project Lead the Way teachers also teaches math, but he does not integrate curriculum across those subjects because the students do not overlap. Many Network programs are science or technology-related programs that seem to lend themselves naturally to incorporating CTE-relevant math, but they still struggle to do it.

One surprising success in integrating math was observed at a site without cohort scheduling or strong teacher collaboration. Building Industry Technology Academy serves students at all math ability levels, but just as teachers did in the 2006 study conducted by Stone et al., provides rigorous math concepts in the CTE context. One student project early in the year is designing and building a doghouse in the style of their choice—we saw such examples as spaceships, fire hydrants, tanks, and trailer homes. Students are given a single piece of wood to cut their pieces from and must diagram and correctly calculate the area of each section they will cut to make sure they have enough material. During another class, students used trigonometry to measure the height of a building and were shocked to learn at the end of the lesson that they had used such advanced math. Besides integrating math concepts into projects, the program has purchased the software-based intervention application called "Accelerated Math," which students can work with during extra time in their CTE class or on their own. One student showed off her binder of completed exercises from the program. While the CTE instructor has a good relationship with several math teachers, the lack of cohort scheduling and multiple math levels make it impossible for the site to develop a fully integrated curriculum, but this does not prevent staff from teaching high-level math content in the CTE context.

The East San Gabriel Valley ROP has also worked to improve math instruction. After being approached by several districts they serve with a request for effective

algebra instruction, they designed a project-based algebra curriculum adaptable to many CTE areas. Students use algebra to design jungles, buildings, and cities, and the projects can be incorporated into most standard algebra curricula. We heard from several instructors who used this curriculum in the context of business or medical programs, and we observed a resource teacher using it with a small special education class. The extent to which the project-based algebra curriculum incorporates true career and technical education, however, is open to question. Although a health professions program might design a health-focused "Wellville" for their city, thereby incorporating an application-based project, there is not necessarily any CTE material built into the algebra curriculum. Such adaptable projects, however, could be useful for programs struggling to fit math into their academy or CTE concentration.

Curricular Rigor

One of ConnectEd's core components is that curriculum must be both academically rigorous and technically demanding. Most schools we visited were still working toward that standard. On the ConnectEd Multiple Pathways Program Assessment Rubric, the average score for Rigorous Curriculum was 2.4 on a scale of 1–4; the average score for Integrated Problem/Project-Based Curriculum and Instruction was 2.7. Both scores fall in the range of Emerging and Operational on the rubric. Classroom observations confirm these ratings. We observed 59 academic and CTE classes across all Network schools and scored them on several items related to rigorous curriculum. On a 5-point scale, the classrooms scored an average of 3.5 on "tasks are challenging and rigorous" and an average of 3.5 on "rigorous teaching and learning is derived from 'complex and authentic' materials." While academic teachers typically covered grade-level standards, sometimes with an integrated project-based component, CTE instructors often missed opportunities to include rigorous academics.

At one arts and media school (Oakland School for the Arts), students remarked that their arts classes lacked even the most basic academic components. One noted that his theater classes did not include reading classic plays or being conversant about the masters and foundational theater artists. Another said that her dance instructor mentioned angles when discussing positions, but only to identify them, not to teach applied math. One ROP construction class seemed to include no academic component at all: students were taught tool safety and built a real house, but received no instruction in planning, design, or any applied academic skills. In a health careers academy, students learned how to take blood pressure and give CPR, but these activities were not linked to academic concepts. In general, it seemed that many schools are missing opportunities to inject rigorous academics into engaging CTE tasks.

Network schools also must balance offering advanced courses, like AP classes in a variety of subjects, with their CTE focus. For every site, it is a trade-off. Oakland School for the Arts changed its graduation requirements to allow more room in the schedule for optional AP classes, like AP psychology, calculus, and statistics. Academies, ROPs, and elective course sequences may rely on the comprehensive high school to offer those courses, but then they are necessarily divorced from the CTE focus and pathways community. Small autonomous schools often have trouble meeting student demand and offering the same range of AP classes that a larger high school might offer. Health Professions High School offers AP calculus, English 11, English 12, and U.S. history, and all classes but calculus are overenrolled. Because of the demanding academic standards teachers must address in these classes, students must complete their integrated projects as homework rather than in class. At a minimum, however, most Network schools have pushed to get as many classes a-g approved as possible, and graduation requirements at many schools include all a-g required courses.

Exhibit 22 presents the results of the classroom observations. During the course of the evaluation, we conducted a total of 54 observations across all sites. The observation protocol—completed by one or two researchers in the classrooms they visited—included aspects of instruction drawn from the ConnectEd rubric as well as other research-based information about effective instruction. The protocol (included in Appendix C) requires ratings across the following domains:

- High-quality instruction
- Student-centered learning
- Rigorous curricula
- Multidisciplinary integrated learning experiences
- Awareness of individual students' strengths and weaknesses
- Supportive learning environment
- High levels of student engagement

Possible ratings on the protocol range from a high of 5 to a low of 1. The data presented in Exhibit 22 represent an aggregation of ratings for observations across all classrooms in all sites. What we most wanted to know was which aspects of each instructional domain seemed strongest and which seemed weakest. We reasoned that such information would be most useful to ConnectEd staff who provide technical assistance and to the sites as they work to improve their programs.

The results must be interpreted with caution because the number of classrooms that were observed varied with each site visit, and the observations varied in length, although our goal was to conduct an observation for an entire class. We piloted the observation protocol before using it in our site visits and were able to establish a

reasonable level of inter-rater reliability. To consider the data definitive, however, would have required more extensive pilot work.

The highest ratings are in the area of classroom management (i.e., planning, clear expectations, well-established routines) and classroom climate (i.e., atmosphere of mutual respect, constructive learning environment, active student involvement and engagement, teacher feedback, and demonstration of learning). The lowest ratings are in areas most closely tied to the concept of integration (i.e., connections to other disciplines, references to outside learning, bridging vocabulary, and differentiated instruction). Some aspects that reflect rigorous teaching (i.e., rigorous tasks, complex materials, real-world skills and problems) cluster around 3.5, also the overall average for the classes observed.

Exhibit 22. Summary of ratings on classroom observations across sites

Observation	Score
Teacher planning	4.47
Clear expectations	4.35
Well-established routine	4.33
Atmosphere of mutual respect	4.32
Constructive learning environment	4.18
Active student involvement	4.06
Students demonstrate learning	4.02
Teacher feedback	3.88
Student engagement	3.88
Classroom appearance	3.85
Independent student work	3.83
Rigorous tasks	3.52
Student enthusiasm for lessons	3.52
Additional support from teacher	3.49
Complex materials	3.48
Real-world skills	3.47
Real-world problems	3.38
Critical thinking	3.38
Probing questions	3.28
Variety of strategies to assess learning	3.23
Industry theme	3.22
Differentiated instruction	2.88
Varying difficulty levels	2.82
Bridging academic and CTE vocabulary	2.32
Outside learning references	2.03
Connections to other disciplines	1.79
AVERAGE	3.50

Work-Based Learning

A wide variety of approaches to work-based learning is being used across Network sites. Opportunities for students to learn in the workplace exist in many programs, but not in all. Some programs require students to complete internships or participate in job shadowing, while others take a more informal approach and offer work-based learning as an option. There is also variation in the extent to which the programs forge ties with local industry partners that lead to work-based learning opportunities for students. In general, the overwhelming sentiment expressed by school staff and students is that work-based learning opportunities such as internships, job shadowing, and mentoring are valuable for a host of reasons. However, perhaps equally strong is the sentiment that building relationships with the business community to create real-world work experiences for students is a major challenge.

Internships

At Build SF, for example, students learn through working on a common project. An architect who contributed to the design and construction of San Francisco's Museum of Modern Art recreates several aspects of that building's construction as a multifaceted project for the Build SF students he supervises. At Health Careers Academy–Palmdale, students learn the day-to-day responsibilities of hospital healthcare workers. Juniors start by learning the basics of patient care, spending three hours per week at the hospital, and work their way up to doing hands-on procedures six hours per week as seniors. East San Gabriel Valley ROP uses yet another approach. Students "do everything in the office," from making appointments at the front desk, to processing payments, to handling the phone system. In all cases, students interact with real people in the professional world and practice the skills necessary to participate in their respective fields.

Benefits of Work-Based Learning

Students and staff at most Network schools have very positive impressions of work-based learning. First, teachers expressed the belief that workplace experiences improve students' academic achievement. Program staff often describe a synergy between classroom learning and on-the-job experiences. As one explained, students learn better when they "hear something in class, then do it in the workplace, then hear it again in class." Another teacher described this dynamic as the integration of theory and practice. Second, program staff frequently explained that work-based learning helps prepare students for their future careers. One administrator valued the opportunity to expose students to the wide range of skill levels that exist in a single career field, from entry-level jobs to highly skilled senior-level positions. Third, others were enthusiastic about the growing professionalism that work-based

experiences engendered in students. Students value the practical, real-world skills they gain and the professional contacts they make for the future. And some employers see this type of learning opportunity as the beginning of a pipeline for future hiring.

Challenges Associated with Work-Based Learning

As frequently as Network staff and students lauded the benefits of work-based learning, they also described the formidable challenges associated with providing these experiences. By far, the most common hurdle appeared to be finding the time and resources to build relationships with industry partners. Staff from many sites noted that it requires an intense dedication of time and effort to research local industries that might be willing to partner, identify appropriate contacts in those organizations, and convince these contacts of the value of offering students the opportunity to job shadow or intern for them. As a result, the availability of workplace learning experiences is spotty at best. Many sites reported that internship opportunities exist for students, but often there are not enough of them for all students. Others reported that the number of opportunities varies from year to year.

A related challenge is matching students with internships based on their interests. One student noted that she and her peers have the opportunity to indicate their preferences about different work-based learning opportunities at the beginning of the academic year, but she explained that it has been difficult to get the internships she wanted, as her top preferences were popular and slots filled quickly. More than once, faculty and staff suggested that their school needs a dedicated staff member responsible for reaching out to industry and creating the internship and other professional experiences that students desire. Many cited insufficient resources as the reason such a position does not exist.

One notable exception is the Kearny High School Complex, which houses the School of Digital Media and Design (DMD) and Construction Tech Academy (CTA). There, three employer outreach specialists (EOS), funded by the ROP, spend considerable time developing meaningful, relevant workplace experiences for students, along with the typical EOS duties such as signing work permits and monitoring the minimum grade point average students must maintain to work.

Staff and students described other challenges associated with student participation in work-based learning activities. One barrier is that most internships are unpaid. Some students must work to help support their families, leaving them little time for an additional unpaid position. Students mentioned that they look for paid internships in their preferred career field, but such opportunities are difficult to find. Sometimes it can be difficult to help students gain entry into certain types of workplaces. For instance, the Space, Technology, and Robotics (STaRS) program in Lompoc focuses

on engineering for the aeronautics industry. Program staff described how difficult it has been getting students work opportunities at nearby Vandenberg Air Force Base because of security and safety concerns.

Evaluating Student Performance in the Workplace

While many staff did not explicitly mention how they evaluate student performance in the workplace, those who did described several approaches. Some programs require students to keep detailed journals or write reports about their daily or weekly experiences in the workplace, to be reviewed by teachers. Other programs said that attendance and professionalism at the internship or job shadow site were the bases for student grades. And still others did more formal evaluations, including reviews by students' employers and self-evaluations, mirroring the types of performance reviews common in many workplaces.

Mentorships

Mentorships between students and professionals in the field are common in many Network schools. In some cases, mentorships are a more feasible work-based opportunity for program staff to develop and support than internships because they are often less formal. Mentors engage with students in a number of ways, from serving as judges of student work, to speaking to students in class about their field, to job shadowing. One student from the Center for Advanced Research and Technology described a fruitful collaboration she had with her mentor last year. Working with a senior staff member at Aquarius Aquarium Institute in Fresno, she shadowed him at his workplace, and he helped her grow coral for a marine ecosystem project at school. She noted that the project was successful, and, as a result of the experience, she has become interested in aquarium work as a potential career choice.

Benefits of Mentorship

Staff cited several different benefits of mentoring for students. As illustrated above, these arrangements may give students the opportunity to work alongside a professional in a workplace, giving them the chance to learn career-related content, meeting a host of new contacts in that field, and enabling them to develop a professional demeanor and skills. And the benefits are not one-sided. According to some program staff, once mentors get to know students and their work, they can become strong proponents of the schools and the mentoring process among their colleagues. This has led to successful ongoing collaborations and has the potential to boost the Network's profile further in the future.

Challenges of Mentorship

The challenges related to mentorships are similar to those for internships. Teachers and staff reported that it takes a great deal of effort to identify potential mentors, match students to mentors, and maintain those relationships. One approach to overcoming this challenge is demonstrated by Manufacturing Production Technology Academy. Students there are required to find their own mentors in the community, using the career center, teachers, family, friends, and the Internet as resources for identifying and reaching out to potential mentors. Some faculty noted that they initially thought this would be a burdensome responsibility for the students; they have since determined that it can be accomplished—with assistance and suggestions from faculty and the director of the program.

Support Services

College and Career Counseling

School counselors play many roles at Network schools. Some roles are typical for all college and career counselors. We discovered, however, that counselors at many Network sites play additional roles and approach their work with students in uncommon ways. Perhaps the most important distinction between counselors at traditional high schools and those at Network schools is that the latter can personalize their work with students in ways that their counterparts at traditional high schools can rarely do.

College and career counselors at most Network schools do the same types of work as all high school counselors. They often maintain a career center for students to explore and typically hold meetings with parents and students to discuss transcripts, college options, and the application process. Counselors intervene when students' grades drop, or when they need to recover units for courses they did not pass. They are involved in master scheduling and tailoring individual student coursetaking. College representatives speak at Network schools, and students visit college campuses as a result of counselors' efforts. These are the normal responsibilities of college and career counselors in every American high school, and the counselors at Network schools generally perform these duties.

Network school counselors often do more. For example, the counselor at the Center for Advanced Research and Technology explained that in addition to being a college and career counselor, he is also the school nurse, psychologist, and friend for students who want to discuss their problems. He has an open-door policy, rather than scheduling individual meetings with students. Some counselors also mentioned that they spend less time than counselors at traditional schools on discipline issues, freeing

them to spend more time on other activities. The counselors at the Kearny complex in San Diego run a racial and cultural tolerance program with some of their additional time.

In other cases, counseling at Network schools is different because counselors approach their jobs differently than do their counterparts at other schools. Quite a few counselors mentioned being much more attuned to students' personal problems than is common at traditional high schools. The counselors at Digital Media and Design explained that, because the school is smaller, they get to know every student on campus by sight and name. They noted that it is not uncommon for students at that school to drop by the counselors' offices and ask for help with a personal problem or to store a gym bag for basketball practice.

These counselors are not alone in believing that they have better one-on-one interactions with their students. One student who attended both a traditional comprehensive high school and a Network school explained that at his old school, he "never saw the counselors," or only encountered them patrolling the lunchroom. At his Network school, he sees the counselors all the time, and he drops in to talk to them and finds them friendly and easy to talk to. For him, this difference has been a meaningful one as he has started planning his life after high school graduation.

Some Network schools make use of technology in their counseling services. One counselor mentioned that he is developing a blog on the school website for all counseling-related events and resources. Another mentioned exploring the use of social networking sites such as MySpace and Facebook to reach out to students. More than one site includes the college application process in the curriculum. Counselors and staff at these sites stressed the importance of reaching every student during the college planning process and found building it into the coursework an effective vehicle for doing so.

Not all Network schools have dedicated counselors for program students. For instance, Build SF has a small number of participants, who are also enrolled at their home high schools. In that case, while students receive informal career counseling from Build SF staff, they receive most of their college and career guidance services from their home high schools. In another example, students at the Center for Advanced Research and Technology (CART) split their time between their home high schools and the CART campus. In that case, students have college and career counselors at both locations. These students found it beneficial to have access to both counseling services.

For Network programs embedded within comprehensive high schools, counselors often serve a mix of pathways and non-pathways students. Some program staff and students explained that this situation can be problematic, however, as the quality of

counseling depends on the individual counselor's understanding of career and technical education and the Network program. They argued that, just as CTE programs suit some students better than traditional paths through high school, the counseling for CTE students must be tailored to their unique goals. As one staff member noted, sometimes counselors do not understand how an industry-based internship can be more valuable to a CTE student than another AP course.

Intervention Services

Faculty and staff at Network schools are well aware of the constant need to reach out to and support students struggling academically. Two approaches to providing this support were most common. First, many of the Network schools ensure that tutors are available to students. Before school, during lunch, after school, on the weekends, and during the summer, teachers and dedicated tutors strive to be available to and supportive of struggling and failing students. In some cases, students are released from their non-academic classes for extra tutoring as well. Evidence of this dedication can be seen at the Center for Advanced Research and Technology, where teachers take turns staying late into the evening every night of the week, so students can drop in and get help. At Digital Media and Design, the SLIC program, funded through the U.S. Department of Education's *Striving Readers* initiative, supports literacy coaches and reading remediation for students struggling with literacy.

The second common approach is offering credit recovery courses and other classes for students who are at risk or have already failed. Credit recovery courses allow students to make up the work they need to successfully pass courses they previously failed. Network schools offer these courses before and after school, at night, online, and during the summer.

Health Professions High School offers a similarly structured course for the California High School Exit Exam (CAHSEE). Students who have failed algebra and are at risk of failing the CAHSEE receive tutoring and support, and students who have already failed the exam receive the assistance they need to pass it next time.

Another approach, taken by the Health Careers Academies in Placerville and Palmdale, gives each teacher a cohort of students to track how many receive Ds and Fs. Every three weeks, teachers review the grades for their respective cohorts and identify students who have received failing grades, triggering a meeting with teachers and the creation of an individualized plan to get each student back on track.

The structure of the Network schools and the collaborative approach to teaching at these sites also foster an environment that facilitates intervention. Teachers often noted that because they meet with their peers so frequently to plan activities and projects, they commonly exchange information about students at risk of failing and

develop strategies to help them. The more personalized environment so often observed at Network schools helps create a supportive environment for students needing assistance. Some teachers observed that project-based instruction allows for much more individualized attention and differentiated instruction than is typical of other instructional approaches. Teachers explained that because they get to know their students so well, they learn their strengths and weaknesses, and students feel comfortable coming to them with questions or problems.

Finally, at some Network sites, parents are involved in support services and intervention for students at risk of failing. More than one school allows parents to track student grades online. And at least one Network school offers periodic parent education workshops, to keep families involved in the academic success of their students.

Recruitment

Network schools approach recruiting students in different ways; some programs make great efforts to recruit students and others choose not to recruit at all. Among those who do recruit, some common approaches have emerged. First, teachers, counselors, and current students are often involved in visiting feeder middle schools to promote the Network program. They speak during class, hand out materials, and show promotional videos about the program. Often it is current students that have produced these materials. Displaying examples of student work is also a common recruitment approach; letting younger students play with a student-built robot, for example, is possibly the most persuasive recruiting tool of all. Word-of-mouth is very frequently cited by students as the way they became aware of Network programs. When asked where they first heard about their school, students said friends, siblings, parents, and middle school teachers told them about it. They also said that they learned about their school through presentations at their middle schools, major presentations or showcases of student work that were open to the community, and program brochures.

Among schools that do not recruit, program staff offered a number of explanations. In some cases, demand for spots in the schools exceeds supply. Digital Media and Design and Construction Tech Academy must give first preference to students in their attendance district. Then, because Digital Media and Design and Construction Tech Academy are also magnet schools, the district maintains waiting lists for students from other parts of the district who would like to enroll. In other cases, such as Building Industry Technology Academy, students self-select into the series of elective courses, and enrollment is not a problem.

One common recruitment challenge is gender inequity. Several programs noted that recruiting female students is difficult. Generally, program staff explain that female

students often shy away from schools with an industry focus that does not traditionally employ many women. These schools are trying to address this imbalance through their recruiting each year. Schools send currently enrolled female students as emissaries to area middle schools, as they can most effectively address questions relating to their unique experiences. One program offers an "invite a girl to class" day, where currently enrolled students invite female peers who are not enrolled to experience a day of classes at the Network school. Program staff hope that some female students will be intrigued by the industry theme and its relevance to the world of work.

Alignment of Implementation with Features of Effective Programs

As they worked with the six initial Network sites in ConnectEd's first year of existence, ConnectEd staff also worked to develop a multiple pathways rubric to clarify the important features of a multiple pathways program and to explicate factors thought to be associated with student outcomes. The rubric lists 19 factors and provides anchors for categories that include *Foundational, Emerging, Operational*, and *Fully Developed*. Several of the first stage and a few of the second stage programs were chosen because there was evidence of successful implementation on a particular component (such as work-based learning or integrated curriculum)—not because they exemplified comprehensively a multiple pathways program.

Be that as it may, one of the goals of the evaluation was to determine how and how well aligned implementation in the Network sites was with a multiple pathways approach, in total. To provide an overview of alignment of implementation in each site, we reviewed the program factor variations described in the preceding section and, using qualitative data from each site, assigned ratings for each domain of the multiple pathways rubric. In doing so, we not only assessed each program's implementation of each factor but were also testing the usability and reliability of the rubric itself. Those ratings are presented below in Exhibit 23. Two sites had overall scores that placed them between Operational and Fully Developed, while 11 sites scored between Emerging and Operational (with seven of those sites leaning more toward Operational). Only three scored in the range of Foundational and Emerging on the rubric.

Exhibit 23. Site Rubric Scores

Program	City	School	Rigorous Curriculum	CTE Course Sequence	Integrated Problem/ Project-Based Curriculum and Instruction	Postsecondary Articulation	Academic Support	College and Career Guidance and Counseling	Pathway Preparation and Orientation	Parent Involvement	Work-Based Learning	Authentic Work-Based Projects
HPHS	Sacramento	Health Professions HS	4	2.5	4	3	3	3.5	3	3	2	NA
PLTW	Barstow	Barstow HS	2	2	2	1	1	1	2	1	0.5	2
BITA	Anaheim	Katella HS	2	3	2	2	2.5	3	2	1	2	2
ESGV-ROP	West Covina	East San Gabriel Valley ROP	2	4	2	4	2	3	2	1	4	2
HCA	Placerville	El Dorado HS	2	3	3	2	3	2.5	2	1	3	2
BuildSF	San Francisco	BuildSF	2	3	3	3	NA	4	2	1	4	3
STaRS	Lompoc	Lompoc HS	3	3	3	1	4	4	2	1	1	2
PLTW	Lancaster	Lancaster HS	2	2	2	2	1	2	2	1	1	2
CART	Clovis	CART	3	4	4	3	3	3	4	1	2	3
CTA	San Diego	Kearny High	2	3	2	NA	2	NA	2	1	2	2
HCA	Palmdale	Palmdale High School	3	3	3	1	3	3	2	2	4	2
ISA	Lancaster	Antelope Valley HS	1	2	2	1	1	1	2	1	1	2
MPTA	Laguna Creek	Laguna Creek HS	2	3	3	1	1	3	3	3	3	3
OSA	Oakland	Oakland School for the Arts	3	3	2	1	1	3	1	1	1	3
Life	Oakland	Life Academy of Health and Bioscience	3	3	3	2	3	3	2	2	3	1
DMD	San Diego	Kearny High	3	3	3	3	2	3	2	1	2	3
		Average	**2.44**	**2.91**	**2.69**	**2.00**	**2.17**	**2.80**	**2.19**	**1.38**	**2.22**	**2.27**

Exhibit 23. Site Rubric Scores (continued)

Program	City	School	Personalized Learning Environment	School and Program Leadership	Inclusion of Targeted Student Population	Teacher Collabo-ration	Scheduling	Established Industry Partners	Systematic Program Evaluation	Student Engagement and Motivation	Post-secondary Tracking	Total	# NA	# filled in	Avg
HPHS	Sacramento	Health Professions HS	3	4	4	3	4	2	3	4	NA	55	2	17	3.24
PLTW	Barstow	Barstow HS	1	2	0.5	2	1	1	3	2	1	28	0	19	1.47
BITA	Anaheim	Katella HS	1	2.5	2	2	1	2	1	4	1	38	0	19	2.00
ESGV-ROP	West Covina	East San Gabriel Valley ROP	2	3	2	1	1	3	3	4	3	48	0	19	2.53
HCA	Placerville	El Dorado HS	3	3	2	3	3	3	1	3	1	45.5	0	19	2.39
BuildSF	San Francisco	BuildSF	4	3	2	NA	NA	4	1	3	2	44	3	16	2.75
STaRS	Lompoc	Lompoc HS	2	3	2	3	2	3	3	3	2	47	0	19	2.47
PLTW	Lancaster	Lancaster HS	2	2	1	1	1	1	1	3	1	30	0	19	1.58
CART	Clovis	CART	4	4	3	4	4	3	2	4	1	59	0	19	3.11
CTA	San Diego	Kearny High	3	3	3	3	4	2	2	3	1	40	2	17	2.35
HCA	Palmdale	Palmdale High School	3	3	2	2.5	4	3	3	3	3	52.5	0	19	2.76
ISA	Lancaster	Antelope Valley HS	2	2	2	2	2	1	1	2	1	29	0	19	1.53
MPTA	Laguna Creek	Laguna Creek HS	3	3	3	3	4	3	1	3	1	49	0	19	2.58
OSA	Oakland	Oakland School for the Arts	2.5	3	NA	1	4	2	2.5	2	1	37	1	18	2.06
Life	Oakland	Life Academy of Health and Bioscience	3	3	3	4	4	3	3	4	1	53	0	19	2.79
DMD	San Diego	Kearny High	4	3	3	4	4	2	3	4	1	53	0	19	2.79
		Average	**2.66**	**2.91**	**2.30**	**2.57**	**2.87**	**2.38**	**2.09**	**3.19**	**1.40**				

What Other Variables Influence Implementation?

Student Factors

Student Demographics

Students participate in the Network pathways voluntarily, selecting this option as one among many, usually because of an interest in the theme, but sometimes because of the smaller environment. They discover the opportunities in a variety of ways—through a high school information night or high school fairs, their counselors, older friends and siblings, parents, middle or early high school teachers, or presentations given while they are in 8th or 9th grade. Occasionally, a student will enroll in the pathway by "accident" (because of scheduling conflicts or district assignment) and will remain as they become interested and engaged.

In 2007–08, Network sites enrolled slightly higher concentrations of African-American and Asian students than did the average high school in California. In the Network sites, 12 percent of all students were African American versus 8 percent statewide; 12 percent were Asian versus 9 percent statewide. Statewide, 45 percent and 31 percent of high school students were Hispanic or White, respectively, compared with 43 percent and 29 percent of students in the Network sites. The racial/ethnic distributions varied greatly by site, with a Hispanic population at or over 70 percent at three sites, and an African-American population over 15 percent at four other sites.

Reflecting state figures, males and females made up approximately half of the population. In Network sites and in the state, males represent 51 percent of high school students. These distributions vary by site: 11 of the 16 sites have at least a two-thirds majority of one gender.

The Network sites represent a diverse group of students with a range of skills and abilities and from a wide range of backgrounds. Very few sites have entrance requirements other than an application indicating interest and, sometimes, a follow-up interview with a counselor or teacher to assess that interest. (Manufacturing Production Technology Academy has a district requirement of a 2.0 GPA and a parent letter; Oakland School for the Arts selects students based on a performance audition or portfolio submission; students enrolling in Project Lead the Way-Lancaster need to be "geometry-ready.") Network sites that are California Partnership Academies also operate under the requirement that 50 percent of their students are at risk. In these sites, meeting that requirement has not been difficult (Space, Technology, and Robotic Systems Academy, Manufacturing Production

Technology Academy). Most sites indicated that their student population ranged in ability from those who are gifted and talented and wanting to take AP courses, to those who are lower achieving and may need extra help, to those with special needs and Individual Education Plans (IEPs). While actively seeking and appreciating this wide range of student skills and abilities, educators acknowledged that it can be difficult to develop a program (and course schedule) that suits all students and responds to all of their needs. But as the coordinator at one site noted, they "meet the students where they are and push them to succeed—even beyond their level."

Relationships with Peers and Teachers

Some Network site courses are not "pure"—i.e., students other than those in a pathway may be enrolled—because enrollment in the particular pathway does not fully populate the classes and the schools must "backfill" with non-pathway students. In all cases, however, the students and teachers in each pathway have created "a family" and often describe themselves as such. Although some educators saw personalization as a natural consequence of having a small learning community or being in a small-school setting, most acknowledged that they put a lot of attention and work into building and improving relationships. Network teachers and students have a different relationship than might develop otherwise, building and expanding upon a foundation of interaction and relevance.

Students often work cooperatively in small teams, not only on assigned projects, but also in everyday schoolwork. They rely on their friends, who are under the same pressures to understand technical and academic concepts, to help them when they struggle. As one student put it, "We're such a close-knit family. You know everything about everyone. . . . Nobody is left behind here." In addition to this informal assistance and to specific tutorial programs available to students, most of the students we interviewed felt that they could ask any teacher—at almost any time—for assistance. Many students felt that they could talk to their teachers and counselors about any problems they may be having. As one student said, "If you come to school and you're having a bad day, they support you. They support you in anything you're doing. Any day, any time. You can tell them anything, really."

Adults at each site confirmed this sense of familiarity and the close-knit relationships and connections it fosters. Many teachers suggested that the students function as a small family, that they get to know their fellow students and their teachers through their work on common projects and interest in a common theme. At one site, the teachers developed a philosophy to treat students like their own children; this concept affected the campus climate and the desire to have students do well academically. Teachers acknowledge that their relationships with the students (and fellow teachers) are different than one might typically find in a high school: "We

know each other, our kids, and where they're going." A principal of a school in which a pathway operated recognized the special nature of the program saying, "When you see the connectedness students have in the academies, the small learning community, camaraderie, closeness to teachers, family feeling—[I want] that for every kid that comes through the school."

Where students are enrolled in ROPs and in community college courses, they also develop strong connections with adults, because of the mix of adults and high school students in their courses. This exposure expands students' perceptions of "the adult world."

Student Engagement

As one educator put it, "It's about rigorous instruction delivered in a way that is engaging to students." The Network sites have an advantage because the majority of students self-select into the programs based on an interest in the industry theme. Channeling that interest and motivating students to meet curricular standards, however, is not a *fait accompli*. Most of the students we talked to were excited by school and explained that the hands-on environment, integrated learning, teachers' encouragement to participate in decisions and activities, and the personal attention from their teachers all led to their excitement and engagement. From the fairly simple (learning CPR) to the extremely complex (cloning a carrot), hands-on activities stood out in students' minds as a way to keep them engaged in their school work and help them understand how to apply their learning to real life. In the words of a student in the Project Lead the Way program in Lancaster, "I think these classes are the best thing in the world. I really like the hands-on activities."

In our student interviews, students pointed out stark differences between their "old" or "home" high school and the pathways programs. "Regular" school was boring; teachers did not have enough time for them; assignments lacked any choices. Many pathways assignments, particularly those that are project-based, allow students some leeway in how they attack the problem or complete the assignment. Some said, "It's a different environment," and they attributed that difference to more personalized instruction and to the teachers' collaboration to make the theme relevant throughout the curriculum. As one student summed it up, "The other kids [who are not in any of the PLTW classes] don't notice the relevance of some of the mathematical concepts. I see the relevance every day. The engineering courses help us see and understand the relevance of algebra and geometry that the other students do not seem to notice."

Roles

Students in Network pathways have shouldered roles beyond that of student; they have become recruiters, mentors, workers, and leaders. In so doing, they have also redefined their role as students. In several pathways programs that do presentations at feeder middle schools, current students are involved in those presentations, presenting aspects of the program and talking with the younger students (Health Professions High School, Health Careers Academy–Placerville, Digital Media and Design, Center for Advanced Research and Technology). At Information Systems Academy, students made a video about the pathway, doing all filming and editing under the guidance of the video production teacher. Teachers, students, the video, and student-built robots all play a part in the presentation to younger students.

In several Network pathways, students become involved in community projects—either as a requirement of their studies or as a service learning experience encouraged by their instructors to teach compassion, volunteerism, and the value of giving back to the community (Manufacturing Production Technology Academy, Health Careers Academy–Palmdale, Digital Media and Design, Life Academy, Building Industry Technology Academy). At Digital Media and Design, students involved in the Associated Student Body participate in community social justice projects, such as working to enact an ordinance that would make the air cleaner. At Life Academy, students worked on a project to educate the community about diabetes and fast food. At Building Industry Technology Academy, students entered the community-wide Project Playhouse competition and were the only non-professional builders in the competition. Proceeds from the resulting auction of the playhouses were given to the homeless. Building Industry Technology Academy students are also involved in a long-term project with Habitat for Humanity. Health Careers Academy–Placerville students operate a first aid station during the California Run in Sacramento.

Teacher Factors

Background Experience

Teachers in the Network programs have a wide range of experience in teaching. While a few teachers are new to the profession, others have been teaching for as long as 28 years. Similarly, teachers' credentials vary widely: some were trained at traditional teacher education programs, while others began through alternative certification programs. Some began their professional lives as teachers, while others worked in different fields before they became teachers. We did not survey teachers for this study, so we cannot provide precise data about the distribution in terms of years of experience and credentials, but the interviews did not reveal any particular patterns of experience among Network teachers.

Similarly, Network teachers have a wide range of industry experience. As would be expected, CTE teachers had almost all worked in fields related to the CTE course they were teaching. Health professions teachers had been Emergency Medical Technicians (EMTs), nurses, or lab technicians. Teachers in the construction programs had worked as contractors or carpenters. Some teachers still work in industry. For example, all teachers at Oakland School for the Arts are professional artists. Some academic teachers had worked outside of education before becoming teachers, although many of them had not necessarily worked in professions related to the program's career cluster. Some of these teachers felt that having experience outside of teaching helps them connect with CTE teachers because they understand the requirements of the business world.

Recruitment and Commitment

Teachers, particularly academic teachers, are recruited for several reasons. Some programs, especially those that are schools-within-schools, have had to recruit teachers from the school-wide population. While these programs try to recruit teachers who are interested, sometimes the only teachers who teach a given subject (e.g., calculus) are recruited because there are no other options. Many program administrators (Health Professions High School, Health Careers Academy–Palmdale, Construction Technology Academy, Center for Advanced Research and Technology) indicated that teacher personality, such as the willingness to collaborate or a belief in integration, is a significant factor in hiring decisions. At several sites, program teachers participate in hiring decisions. As one teacher said, "We are as close as a family. We need to make sure that new teachers fit the team." Others have found that teachers brought in as substitutes or advisors to the program make good teaching recruits because they are already familiar with, and excited about, the program.

Because teachers are usually recruited with an eye toward their belief in integrated education, they tend to be committed to the programs. Teachers at four sites felt that integrated education requires more work (longer days) for teachers than more traditional programs, so teachers have to be committed to the work to put in the effort. Committed leadership helps the effort, although at least one site felt that having a group of committed teachers, a "solid force," kept the program alive, even when administration at the school or district changed. At several sites, teachers said that knowing their students so well—so much more than in a traditional program—kept them committed to the work, to seeing the kids through to graduation. It might also have meant, however, that they often ended up spending their own money to help students with appropriate clothing, tuition for classes at the community college, or funds for equipment.

Collaboration

Teachers work together in many ways. While few programs have time set aside for regular collaboration, teachers do find time to develop integrated projects and align curricula. At many sites, a group of three to four teachers may work together to develop a project involving multiple disciplines. While some programs can make a common prep period or weekly meeting time available for planning, at other programs, teachers develop projects during "buy-back" days or informally at lunch meetings, after school, via e-mail, or even when carpooling.

Sites also foster collaboration by developing curricula that lead to common topics. For example, several sites selected "themes" for grade levels at the beginning of the year. In grade 10, the focus might be on forensics, or in grade 9, on living in outer space. Teachers reported that even if they could not find time to collaborate or team-teach, they would base readings and projects on the theme, thus enabling students to see the connections between disciplines.

The training teachers receive to teach in integrated programs also varies, not just from program to program, but from teacher to teacher. Some programs have trained teachers specifically in developing integrated curricula. Most have professional development offerings that all teachers receive, such as training on teaching literacy. For programs that are really a series of courses, such as the Project Lead the Way (PLTW) programs, all teachers teaching these courses have received PLTW training. At least one administrator says that professional development for teachers is very "deliberate." Teachers receive training in areas that will benefit them the most. For one person, this might mean a course in classroom management, while, for others, it might mean more training in the relevant career cluster. Professional development is an ongoing requirement for all teachers, and it is clear that Network programs try to ensure that teacher training is aligned with the needs of the work.

What Are the Apparent Relationships between Student Outcomes and Fidelity of Implementation to the Pathways Approach?

Ideally, if we compared the ranking of the 16 Network sites on the multiple pathways rubric to a ranking of sites based on student indicators, they would align (i.e., sites that have implemented multiple pathways with greater fidelity to the rubric domains would have better student outcomes than those who have not). To test this hypothesis, we developed both a measurement of fidelity and a measurement of overall student success. The fidelity index is fairly straightforward: it is an average of each site's scores on each factor of the multiple pathways rubric (discussed briefly in a previous section and presented fully in Appendix C).

The success index is a bit more complicated, as it incorporates a number of disparate student outcomes, and not every site had data for every outcome. After several iterations, we determined that this index would be based on the student outcomes of primary import: measurable subject area knowledge, 10th-grade CAHSEE scores, attendance, transition, and preparation for postsecondary education. Therefore, the index includes English test scores (an average of the proportions of students reaching proficiency or higher on the three English CSTs), mathematics test scores (an average of the proportions of students reaching proficiency or higher on the four mathematics CSTs), science test scores (an average of the proportions of students reaching proficiency or higher on the five science CSTs), social studies test scores (an average of the proportions of students reaching proficiency or higher on the two history CSTs), CAHSEE scores (the proportion of sophomores passing the English/language arts and mathematics sections), attendance rates (an average of all four classes' attendance rates in 2007–08), transition rates (an average of all four classes' "promotion" to the next grade or to graduation in 2007–08), and the proportion of seniors satisfying a-g course requirements by graduation. Exhibit 24 presents the 16 sites in ranked order on the fidelity index, along with their scores on the success index.

Exhibit 24. Ratings on the fidelity and success indices, by site

Sites	Fidelity Index	Success Index Scores
Health Professions HS	3.2	52.0
Center for Advanced Research and Technology	3.1	51.3
Digital Media and Design	2.8	54.7
Life Academy	2.8	48.2
Health Careers Academy–Palmdale	2.8	58.4
Build SF	2.8	52.6
Manufacturing Production Tech Academy	2.6	74.6
East San Gabriel Valley ROP	2.5	71.3
Space, Technology & Robotics Academy	2.5	66.1
Health Careers Academy–Placerville	2.4	61.4
Construction Tech Academy	2.4	50.4
Oakland School for the Arts	2.1	64.2
Building Industry Technology Academy	2.0	41.0
Project Lead the Way—Lancaster	1.6	62.7
Project Lead the Way—Barstow	1.5	64.9
Information Systems Academy	1.5	48.5

As evident in Exhibit 24, there is no direct relationship between high scores on the rubric and a high score on the success index combining achievement indicators. Many factors are at work in these indices that are difficult to control. Certainly selection bias is one. While most sites indicate that they do not use any particular selection criteria or procedures, other factors related to student predilection and initiative clearly determine who enrolls in these programs. Factors associated with the type of industry sector may also influence student performance on particular achievement tests; for example, students attracted to engineering-related programs may have higher scores on math or science exams. Within the Network, the engineering-related programs also have particular structures, which affect their rubric scores as well, and the nature of the curriculum also may tend to influence both the rubric score and student performance on particular achievement tests. Seeking a less stringent and more realistic correspondence, we also tried grouping sites in several different ways into two or three groups. Group definitions were based on fidelity (high, moderate, low), fidelity without a few of the sites that seemed qualitatively different from the others, opinion of fidelity without substantiation from the rubric, and program/pathway structure. Only when grouping sites into two groups by structure (roughly, "academy-like" and "non-academy-like") did any correspondence become apparent: Group A (the "academy-like" pathways consisting of Construction Technology Academy, Health Careers Academy–Palmdale, Health Careers

Academy–Placerville, Manufacturing Production Technology Academy, Digital Media and Design, Health Professions High School, Life Academy, Space, Technology, and Robotic Systems Academy, and Information Systems Academy) had a higher score on the success index (55.2) than did Group B (52.7).

After a review of the rubric by evaluators who visited the sites, we concluded that the rubric is more useful in assessing pathways structures that are more academy-like than those that are atypical or more loosely structured. Programs that are atypical or more loosely structured receive lower marks on the rubric, given the rubric descriptions and definitions of ratings. For example, Build SF essentially offered two courses and internship opportunities to students from numerous schools throughout San Francisco and its coordinators had little control over many of the factors assessed on the rubric. The same is true of other programs that are series of courses rather than being coordinated programs of connected, thematic courses provided to cohorts of students. As hard as these educators may work, a number of factors are out of their hands.

This observation should not be construed as advocating that the rubric dismiss those factors that are out of the control of program coordinators. The multiple pathways rubric is designed to measure the extent to which students have specific learning opportunities, teachers work in a fashion believed to be instrumental to the pathways approach, and structures and agreements with partners support the program and the students. However, further definition and investigation into the rubric is necessary before we can expect it to be an indication of successful student outcomes.

One other possible explanation for the disconnect between the fidelity index and the success index is that the rubric itself may be a valid measurement tool of the multiple pathways approach, but that the measurement of student outcomes is not aligned well with program goals. These student outcome measurements were taken at the end of the 2007–08 school year and did not take into account any change over time that would indicate program improvement as a result of putting aspects of the multiple pathways approach in place, nor having them in place for any length of time.

What Themes Emerged from the Research as Key Factors Affecting Implementation in the Network Sites?

In this section, we summarize the factors that seemed to have the most profound effect on the quality of implementation of the pathways approach in the Network sites and on the results. These are drawn from our analyses of the data on program variables and reflect cross-cutting themes.

Relationships

A report called *Voices from the Inside* (Poplin 1994) described an unusual study conducted on school restructuring—unusual because of its methods and because it concluded that most education remedies offered by education reformers bore little relation to the problems identified by students, teachers, and parents. Instead, it asserted that issues such as low student achievement and problems with the teaching profession were, in fact, consequences of the real problems in schools. The study was based on 18 months of in-depth conversations in four California schools, and the issue of relationships was the most commonly cited problem. According to the report, "Kids said, 'I do well in classes where the teachers respect me, and I do poorly where the teachers don't like me'." This noteworthy finding has direct relevance to one of the key findings in this study and was also the most common theme throughout our interviews and focus groups—that students value these programs because of the strong and positive relationships they have with the staff and with each other.

A comment repeated often across the sites was that being in the program felt "like a close-knit family" or that the students and teachers are part of a "small and supportive community." A student at East San Gabriel Valley ROP said, "ROP teachers are more caring, more encouraging than school teachers." Many students commented on the fact that all the teachers know their names and interact with them outside of class even when they do not have them in class. At Digital Media and Design, the fact that teachers meet together often to collaborate and discuss students' progress means that they can inquire about student work across classes. Students at many sites clearly feel respected and "treated like adults." A student at Information Systems Academy reported, "The students have a stronger bond with the teachers in the program than other students in the school have with their teachers. The teachers seem to be nicer because the students are more determined." The Center for Advanced Research and Technology (CART) provides a unique opportunity for

students because they leave their home schools and spend a half-day at CART each day. The students noted that "CART is a fresh start; your cliques at your home high school don't follow you." These students were effusive about the support they received from their teachers.

A number of students made comments indicating that the pathways programs provided a "safe haven" for them. A student at Oakland School for the Arts summed up this feeling: "As a young man and an ethnic minority, you can't try to do ballet everywhere you go. There's so much acceptance of trying new things and different lifestyles here. I feel incredibly safe doing whatever art I want. It gives kids from all neighborhoods a safe haven to do what they do." Another student comment offers a good summary:

> The school changed our lives, the small atmosphere. It matures you. It focused you on staying in school . . . . The teachers care. They're all in your business, but you allow them to be. They'll do home visits and support you in every way. There's a lot of pressure, but a lot of people backing you up, teachers fighting for you to succeed. It's harder to fail, not because the schoolwork is easier but because people won't let you. They tell us we can go to college and support us. They expect all of us to be successful!

This feeling of connectedness with the program and with the faculty clearly translated into strong motivation, high levels of engagement, and a mature attitude about education and their future among students across all sites. While in some cases it was difficult to isolate the effects of the pathways approach from the effects of the personalization that arose from the small school environment (e.g., in Digital Media and Design and Construction Tech Academy), the evidence across all the sites was strong.

Staffing and Teacher Quality

The ConnectEd principles for multiple pathways and the necessary program components call for teachers with strong and unique talents. The challenge to integrate rigorous academic and technical curriculum, complement classroom learning with work-based opportunities, and support students with a range of ability levels is significant. Our findings suggest that the two most important aspects of this challenge were (1) the ability to collaborate on curriculum development and instructional planning in substantive ways and (2) the union of academic and technical knowledge.

Several program administrators noted the difficulty of determining from interviews whether teachers truly have the ability and motivation to collaborate with their colleagues in expected ways. Some noted that people can be disingenuous during the interview process, so they look for other clues to discern a good fit. For example, Health Professions High School looks for interest in doing work beyond teaching, such as running a club. Other administrators make sure that potential teachers understand the extent to which they would be expected to collaborate. At Construction Technology Academy, the administrator tells candidates that working at the academy is like living in a dorm, where regular teaching jobs are more like living in a condo. It requires someone willing to reach out, collaborate, and interact regularly with others, even when they disagree.

The second requirement—that teachers reflect both strong academic and technical expertise—is also a difficult goal to attain. Teachers with industry experience can make important contributions, but they often want to return to their previous field for better salaries, or they discover that they don't really like teaching. It is not always possible to hire teachers with the best trade experience because they do not meet credentialing requirements (e.g., Manufacturing Production Technology Academy, Construction Tech Academy). Some sites have had problems with teachers placed there by union requirements (e.g., Health Professions High School, Digital Media and Design).

Because of these two challenges, teacher turnover can be a big problem because teachers are so integral to the process of establishing and sustaining strong programs. As several teachers noted at the Center for Advanced Research and Technology, it is simply not easy to integrate a new faculty member, especially if that individual is not committed to collaboration.

Curriculum Integration

The difficulty of developing integrated curriculum as is intended in a multiple pathways program is well known. While most Network sites had undertaken extensive work on developing and using project-based learning, true and extensive integration of academic and technical content was more difficult to find. It also seemed that there were many different definitions or interpretations of the concept of integration at work in Network sites.

It was also clear that it is much easier to integrate some academic areas than others. The ease of integration, of course, depends on the industry areas the site emphasizes, but the most notable shortcoming is the failure to integrate math. We found some examples of math integration, but even these were most often for lower levels of

math. This is especially important because students across sites performed least well in math when compared with other students in the state (see section on student outcomes, p. 41).

Most staff interviewees acknowledged the value of developing and using strong integrated curriculum, but they lacked either the capacity or sufficient time to collaborate with others to really think through and develop it. There is a clear need for additional support and shared examples of how to meet this challenge.

Work-Based Learning

Even though most students across the sites have the opportunity to participate in some sort of work-based learning opportunity, these are not as expansive or consistent as would be expected. There are numerous barriers to establishing and sustaining work-based learning. The first is that it takes a great deal of time to do the work necessary to identify and arrange for such opportunities. In some cases, there are restrictions related to security or safety. Finally, the ability to secure or to pay for transportation precludes the establishment of work-based experiences for some students.

Challenges to Sustainability

An in-depth examination of costs was beyond the purview of this study, but researchers included questions about costs in their interviews, and it often surfaced as one of the challenges the sites face. Network sites agreed that, without federal Perkins funds, funds provided through the California Partnership Academy, the ROPs, and grants, they would not be able to operate. Nevertheless, their commitment to the programs was clearly evident in their unstinting efforts to seek the funding needed for the various ongoing and periodic costs. Significant costs are related to building or retrofitting facilities; obtaining and upgrading technology and equipment; and securing specialized supplies and consumables.

Time—as always in schools—is a significant cost as well. Apart from instruction, time must be allocated for staff to work together to develop curriculum and plan integrated projects, as well as to develop and oversee work-based learning opportunities. These programs also required a high level of commitment on the part of staff, but in most cases, the strong enthusiasm for their work translated into their willingness to go the extra mile and do what was needed to meet students' needs.

Conclusions

The 16 demonstration sites in the ConnectEd Network reflect many of the desired features of multiple pathways programs. They provide rich information both about what makes these programs appealing to students and teachers and what makes them challenging to implement. The achievement data for students participating in these programs seem to indicate something going on in these programs that is associated with positive learning outcomes. But it is, perhaps, equally important to note positive effects on student behavior and attitudes toward learning, as well as the effects on their learning environment. The high level of student engagement and motivation and the efforts of teachers to create curriculum and offer instruction that integrates academic and technical content and incorporates work-based learning certainly should be considered as intervening variables contributing to positive effects on outcomes.

Of perhaps greatest interest to policymakers are the results related to achievement and learning. The analysis of indicator data revealed that students enrolled in pathways in the ConnectEd sites were more likely to pass the California High School Exit Exam (CAHSEE) on their first attempt in 10th grade than were high school students generally, based on statewide comparisons. The difference is even more marked when the data are disaggregated for subgroups (i.e., for Hispanic and African-American students). This higher passing rate was true for both the English language arts and mathematics exams.

With regard to the California Standards Tests (CSTs), pathways students at ConnectEd sites generally performed better in 2007–08 than students statewide on the CST in English/language arts 10 and 11 and in U.S. history. These differences are once again greater when the data are disaggregated by race/ethnicity. Overall, students at ConnectEd sites did not perform as well as students statewide on mathematics and science CSTs, with the exception of earth science, where the performance of students in ConnectEd sites exceeds the performance of students statewide.

The data on grade-to-grade promotion, continuation, attendance, graduation, eligibility for UC/CSU, and postsecondary plans also provided evidence that these sites are clearly doing some things right. Attendance, promotion, and graduation rates were very high for students in Network programs—all above 90 percent, with average rates of 94 percent for attendance, 95 percent for promotion across grade levels, and 98 percent for graduation. Overall, the findings on achievement present a number of positive results and some negative ones as well, but the strong results on

the CAHSEE exam and on specific CSTs, particularly English—even more pronounced when controlled for race/ethnicity—are surely indicative of programs with potential for affecting student learning in positive ways.

Combining the findings on student achievement outcomes with qualitative data showing very strong positive effects on student attitudes toward school and learning, engagement, and motivation, a picture emerges of programs making a difference in students' lives. This warrants additional research. Further, the qualitative research revealed strong effects on teacher practice and attitudes. Teachers report very positive experiences with these programs, seem to relish the opportunity to collaborate, and enjoy the high levels of student engagement in their classrooms. They also are quick to note the difference in student behaviors—their maturity, awareness of the world and workplace, and ability to communicate and pursue tasks to completion.

Challenges

One of the promising practices noted below is the integration of academic and technical content in the curriculum; it is also one of the greatest challenges. Integration is not easy to accomplish, for many reasons frequently cited in the literature. It takes time to plan and collaborate—something teachers rarely have enough of. It also takes a lot of careful thought to align standards and content from different subjects and to plan projects encouraging students to connect theory and practice. Teachers seemed to recognize, however, that integration provided a powerful tool for student engagement and learning.

There is also the challenge of injecting a more general high level of rigor into the instruction at the sites. In a report on high school reform, Jerald (2006) makes an interesting observation about this challenge in noting that the study of the Gates high school reform effort documented that teachers are clearly "clamoring for help" in this endeavor.

Another key component of multiple pathways is that the connection between classroom learning and real-world applications outside school. This aspect was also challenging for the ConnectEd sites, because it takes a lot of time to secure internships and mentorships, job shadows, and other work-based learning opportunities. While all valued this component of the programs, many found it difficult to establish these connections. Jerald (2006) also speaks about this strategy as well when he quotes Carnevale from a personal interview in which he called for "a new kind of curriculum that integrates traditional academic knowledge and skills with 'applied competencies' that adults actually use on the job." Jerald goes on to suggest that "Rigor and relevance are not zero sum tradeoffs."

Finally, there is the challenge of resources. Within these programs, there is not a lot that can be considered optional. Their success depends on adequate facilities, equipment, consumables, and the staff time to make it all work. Again noting Jerald's (2006) work, a key point in his synthesis is that significant improvements can come from "combining strategies and solutions long thought to be disparate," but he acknowledges that "real change—though not impossible in high schools—can be slow and difficult." These scholarly remarks on the challenges of high school reform are certainly relevant to these sites.

Promising Practices

As noted throughout this report, the designers and implementers of these programs have established programs manifesting one consistent finding: students respond very positively and understand well the factors that make a difference for them. Teachers know their names, their learning needs, their strengths, and they find ways to present an integrated academic/technical curriculum, though not always in as thorough or comprehensive a way as one would hope or they would like. The programs clearly engage and motivate students, and they develop a much keener awareness of the skills needed in the workplace as well as their options and preferences than do students in traditional high schools. The relationships they form with faculty, staff, industry mentors, and each other allow them to feel better prepared for the world they will enter following high school. These findings hold considerable promise for a new approach to high school education.

The opportunities these programs provide for collaboration and integration also suggest practices that can be of enormous benefit to those who want to ensure that students are ready for a 21st-century world. The interface between the classroom and workplace is one aspect of such collaboration. Integrating academic and technical content serves to strengthen learning. Similarly, the opportunity for teachers to collaborate thoughtfully in planning and teaching has been shown in numerous studies to elevate student learning and teachers' satisfaction in their work.

While none of the aforementioned practices can be considered novel, our findings from this study support the notion that these practices have the potential to make a difference in high school students' education. They also support the notion that they are worth a deeper examination and an exploration of ways to sustain them.

Building a Learning Community through the Network

While it was beyond the scope of this study to examine the functioning of this group of demonstration sites as a network, this is an important learning opportunity that should not be missed. With the growing emphasis in educational literature on the development of professional learning communities, this topic could benefit from further efforts to capitalize on what Network sites have learned and continue to learn. The results of this study present one such opportunity for discussion and exploration.

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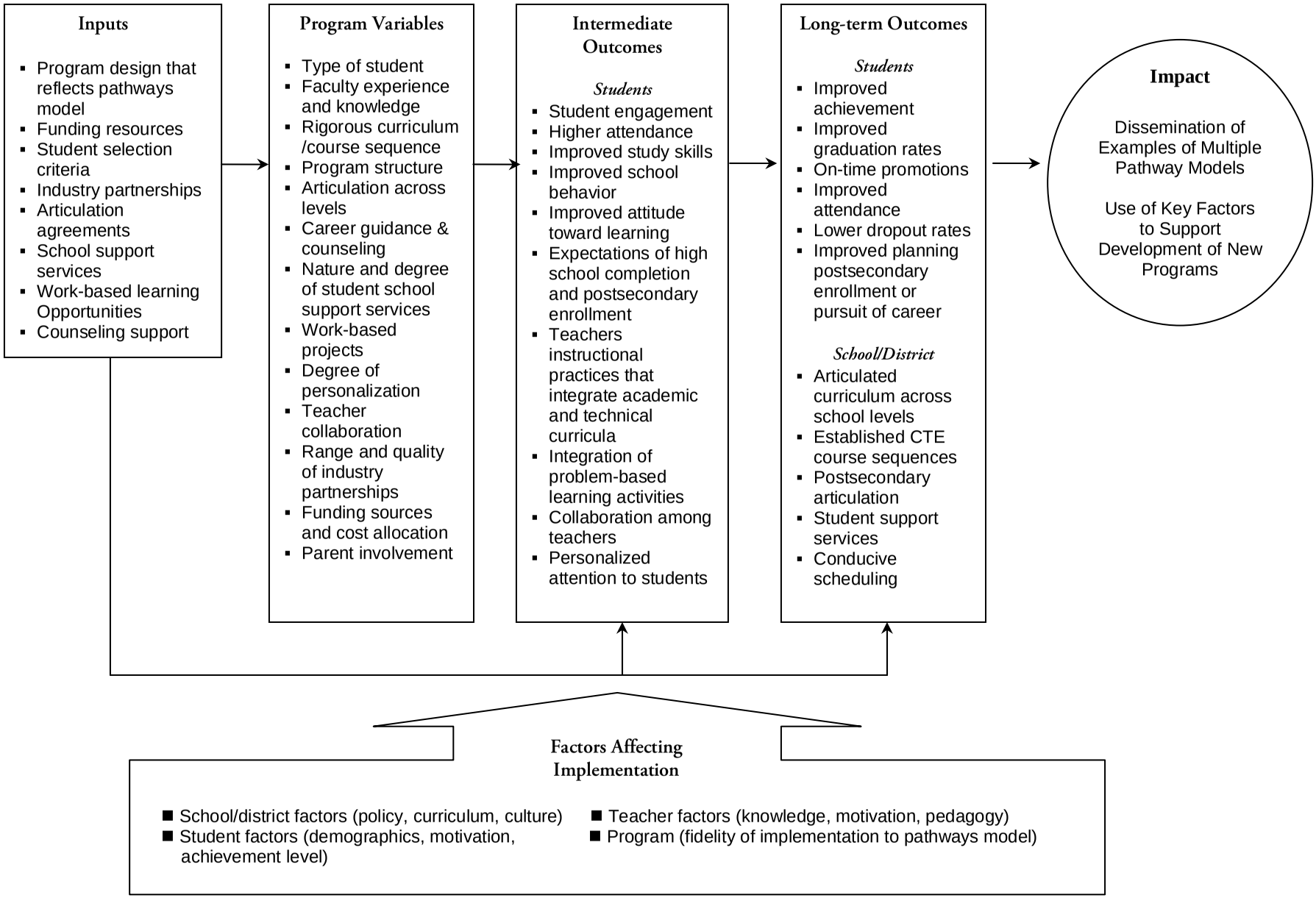
Appendix A: Logic Model and Data Request Tools


Inputs
Program design that reflects pathways model
Funding resources
Student selection criteria
Industry partnerships
Articulation agreements
School support services
Work-based learning Opportunities
Counseling support
Program Variables
Type of student
Faculty experience and knowledge
Rigorous curriculum /course sequence
Program structure
Articulation across levels
Career guidance & counseling
Nature and degree of student school support services
Work-based projects
Degree of personalization
Teacher collaboration
Range and quality of industry partnerships
Funding sources and cost allocation
Parent involvement
Intermediate Outcomes
Students
Student engagement
Higher attendance
Improved study skills
Improved school behavior
Improved attitude toward learning
Expectations of high school completion and postsecondary enrollment
Teachers instructional practices that integrate academic and technical curricula
Integration of problem-based learning activities
Collaboration among teachers
Personalized attention to students
Long-term Outcomes
Students
Improved achievement
Improved graduation rates
On-time promotions
Improved attendance
Lower dropout rates
Improved planning postsecondary enrollment or pursuit of career
School/District
Articulated curriculum across school levels
Established CTE course sequences
Postsecondary articulation
Student support services
Conducive scheduling
Impact
Dissemination of Examples of Multiple Pathway Models
Use of Key Factors to Support Development of New Programs
Factors Affecting Implementation
School/district factors (policy, curriculum, culture)
Student factors (demographics, motivation, achievement level)
Teacher factors (knowledge, motivation, pedagogy)
Program (fidelity of implementation to pathways model)

ConnectEd
The California Center for College and Career

Transforming today's education
for tomorrow's economy

May 27, 2008

[contact]
[school]
[address]

Dear [contact]:

Greetings! We trust that things have been going well for you as you have developed and implemented your multiple pathways program this year. As you know, your grant agreement with ConnectEd specifies that you will collect and submit to us data regarding your students' outcomes. We are writing now to remind you of this requirement. We believe we have developed a procedure to help you organize and submit your data that will not be overly burdensome, though we do understand that it will take some time and effort.

Our analysis will be based on *individual student-level data* so that we can answer the following questions:

- What is the achievement level (based on 2008 CST subtest scores, CAHSEE pass rates, and GPA) of students that are participating in these programs?
- How do the achievement levels of students in the demonstration programs compare to similar groups of students (within the school or district and within California)?
- What is the grade-to-grade promotion rate (percent of students on track for on-time graduation), program continuation rate (percent of students continuing to participate in your program next year) and graduation rate of students that are participating in these programs?
- Do these rates vary by gender and ethnicity, and how do these various sub-groups' achievement levels or rates compare to statewide measures?

We would also like to know seniors' eligibility for UC/CSU admission (based on their secondary coursetaking) and their postsecondary plans.

This analysis will be used, first and foremost, to provide information to the James Irvine Foundation about the success of programs that incorporate the ideals of multiple pathways as promoted by ConnectEd. Although we need individual student-level information from you in order to calculate accurate comparisons, we assure you that no student will be identifiable from any measure or statement we publish.

The enclosed spreadsheet provides a template for you to use in querying your data system and/or organizing the data to send to us. Although we believe two questions will need to be entered by you (expected enrollment in the program next year and students' postsecondary plans), most information should be readily available from your student information system.

We assume that your system can export data as an Excel file; if not, our computer systems and analysts can handle a variety of data formats, and we can discuss this when we call you following your receipt of this letter or you can give us a call at any time. We do not expect you to re-enter data in Excel "by hand" (with the possible exception of the two indicators mentioned above).

Prior to the end of the current school year, you need to survey your seniors to ask about their current post-graduation plans (essentially, what they plan on doing in the fall). We have attached a form that you may use as is or that you may revise to meet your own needs. (For example, you may want to obtain more detail about the specific school in which they plan to enroll, or in what type of job they intend to find employment.) If you already collect students' postsecondary plans through another means, we can accept those results as well, but please attempt to obtain all of the information requested.

We ask you submit all data to us, with the exception of the CST scores, by **July 28, 2008**. The CST score data are due **September 30, 2008**.

As mentioned above, we will follow this letter with a phone call to respond to any questions you might have and to have a discussion about the appropriate comparison school data for us to use. At that time, we will also discuss our overall plans for the 2008 evaluation. If you need to contact us regarding the collection of these data, we will be available to respond to your questions:

- Beverly Farr is responsible for the overall evaluation:
  (510) 849-4942 or (510) 647-4301 bfarr@mprinc.com

- Denise Bradby is responsible for the specifics on data elements and analysis:
  (510) 849-4945 dbradby@connectedcalifornia.org

Arlene LaPlante and Gary Hoachlander are working very closely with us on the evaluation and will also be available for any questions you might have.

Thank you in advance for your attention to this matter. It is vital to us, the James Irvine Foundation, and the field to provide evidence about the progress and success of multiple pathways programs.

Best regards,

Beverly Farr	Denise Bradby
Director of Evaluation	Senior Associate for Program Improvement and Data Development

Enclosures

ConnectEd: The California Center for College and Career
Data Collection Template

Freshmen

	Gender	Race/ ethnicity	Was student promoted to grade	Is student expected to be enrolled in your program next year?	Student's GPA for this year	Attendance					CST English 9		CST General Math --if applicable		CST Algebra I --if applicable		CST G --if ap
	(male/ female)	(1 of 9 choices)	(yes/no)	(yes/no)		Days Expected	Days Present	Of days absent, # of days excused			(score)	(proficiency level)	(score)	(proficiency level)	(score)	(proficiency level)	(score)
student 1																	
student 2																	
student 3																	
student 4																	
student 5																	
student 6																	
student 7																	
etc.																	

Choices for race/ethnicity: African-American; American Indian/Alaskan Native; Asian; Filipino; Hispanic/Latino; Pacific Islander; White; multiple; unknown/no response
Options for proficiency level: advanced, profocient, basic, below basic, far below basic

Sophomores

	Gender	Race/ ethnicity	Was student promoted to grade	Is student expected to be enrolled in your program next year?	Student's GPA for this year	Attendance			10th grade ELA CAHSEE	10th grade math CAHSEE	CST English 10		CST General Math --if applicable		CST Algebra I --if applicable		CST G --if ap
	(male/ female)	(1 of 9 choices)	(yes/no)	(yes/no)		Days Expected	Days Present	Of days absent, # of days	(score)	(score)	(score)	(proficiency level)	(score)	(proficiency level)	(score)	(proficiency level)	(score)
student 1																	
student 2																	
student 3																	
student 4																	
student 5																	
student 6																	
student 7																	
etc.																	

Choices for race/ethnicity: African-American; American Indian/Alaskan Native; Asian; Filipino; Hispanic/Latino; Pacific Islander; White; multiple; unknown/no response
Options for proficiency level: advanced, profocient, basic, below basic, far below basic

Freshmen

	Geometry applicable		CST Algebra II --if applicable		CST Earth Science --if applicable		CST Biology --if applicable		CST Life Science		CST Chemistry --if applicable		CST Intg/Coord Sci 1 --if applicable		CST Intg/Coord Sci 2 --if applicable	
	(proficiency level)	(score)	(proficiency level)	(score)	(proficiency level)	(score)	(proficiency level)	(score)	(proficiency level)	(score)	(proficiency level)	(score)	(proficiency level)	(score)	(proficiency level)	
student 1																
student 2																
student 3																
student 4																
student 5																
student 6																
student 7																
etc.																

Sophomo

	Geometry applicable		CST Algebra II --if applicable		CST Summative Math --if applicable		CST World History		CST Life Science /Science 10		CST Biology --if applicable		CST Chemistry --if applicable		CST Physics --if applicable		CST Intg/Coord Sci 1 --if applicable		CST Intg/Coord Sci 2 --if applicable	
	(proficiency level)	(score)	(proficiency level)	(score)	(proficiency level)	(score)	(proficiency level)	(score)	(proficiency level)	(score)	(proficiency level)	(score)	(proficiency level)	(score)	(proficiency level)	(score)	(proficiency level)	(score)	(proficiency level)	
student 1																				
student 2																				
student 3																				
student 4																				
student 5																				
student 6																				
student 7																				
etc.																				

Juniors

	Gender	Race/ ethnicity	District	School	Was student promoted to grade 12?	Is student expected to be enrolled in your program next year?	Student's GPA for this year	Attendance				CST English 11		CST Algebra I --if applicable		CST Geometry --if applicable	
	(male/ female)	(1 of 9 choices)	(Clovis/ Fresno)		(yes/no)	(yes/no)		Days Expected	Days Present	Of days absent, # of days excused		(score)	(proficiency level)	(score)	(proficiency level)	(score)	(proficiency level)
student 1																	
student 2																	
student 3																	
student 4																	
student 5																	
student 6																	
student 7																	
etc.																	

Choices for race/ethnicity: African-American; American Indian/Alaskan Native; Asian; Filipino; Hispanic/Latino; Pacific Islander; White; multiple; unknown/no response
Options for proficiency level: advanced, profocient, basic, below basic, far below basic

Seniors

	Gender	Race/ ethnicity	District	School	Did student graduate in May/June?	Student's cumulative GPA	Student's GPA for this year	Attendance			Is student eligible, based on courses completed (meeting all A-G course requirements), to enter the UC/CSU system?	ELA CAHSEE	Math CAHSEE	PSE Plans?			
	(male/ female)	(1 of 9 choices)	(Clovis/ Fresno)		(yes/no)			Days Expected	Days Present	Of days absent, # of days excused	(yes/no)	(score)	(score)	(1 of 8 choices)			
student 1																	
student 2																	
student 3																	
student 4																	
student 5																	
student 6																	
student 7																	
etc.																	

Choices for race/ethnicity:

African-American	Asian	Hispanic/Latino	White	unknown/no response	
American	Filipino	Pacific Islander	multiple		

Choices for PSE plans:

4-year only	2-year only		Apprenticeship/technical training	Military
4-year + employment	2-year + employment		Employment only	Other

Juniors

	CST Algebra II --if applicable		CST Summative Math --if applicable		CST U.S. History		CST World History		CST Biology --if applicable		CST Chemistry --if applicable		CST Physics --if applicable		CST Intg/Coord Sci 2 --if applicable		CST Intg/Coord Sci 3 --if applicable	
	(score)	(proficiency level)	(score)	(proficiency level)	(score)	(proficiency level)	(score)	(proficiency level)	(score)	(proficiency level)	(score)	(proficiency level)	(score)	(proficiency level)	(score)	(proficiency level)	(score)	(proficiency level)
student 1																		
student 2																		
student 3																		
student 4																		
student 5																		
student 6																		
student 7																		
etc.																		

Seniors

student 1			
student 2			
student 3			
student 4			
student 5			
student 6			
student 7			
etc.			

Appendix B: Evaluation Methods

To frame the approach for this evaluation, we developed a logic model (see Appendix A) to represent the overall concept for the project, including the inputs, program variables, and outcomes that are viewed as key components. The logic model shows the relationships among these components. To develop the logic model, we drew on an implementation rubric that ConnectEd staff have developed and refined for monitoring the sites and providing technical assistance on features of the multiple pathways approach. We used those features to identify a set of program variables that were integrated into the logic model. The domains included on the rubric provided the framework for evaluating fidelity of implementation in the individual sites (see Appendix C).

Using the logic model, we identified a set of constructs that framed the evaluation, namely (1) program variables, (2) factors that affect implementation, (3) impact, and (4) costs. We then used these constructs and the evaluation questions to generate a matrix of appropriate data collection methods and the data points that address the components of the multiple pathways approach and allow us to answer the questions by analyzing and synthesizing the data collected. The detailed matrix of these key domains upon which the evaluation focused, the associated evaluation questions, and the data collection methods are included in the Appendix. It was important that the evaluation be designed so that data could be collected on both the intended and unintended effects of the grantees' programs on students, teachers, and schools.

Quantitative Data

In this report, we provide summary descriptive data garnered from the collection of onsite data. The impact part of the evaluation examined indicator data obtained from existing school and district achievement data systems. As noted earlier, however, the intent of collecting these data was not to establish any causal relationship between participation in the multiple pathway approach as implemented in the demonstration sites and academic outcomes, but rather to explore the relationship between participation in a multiple pathways program and achievement outcomes.

For the Network as a whole, we collected data on the number of student participants, their distribution by grade level, and their demographics. Results are presented for student performance on the California High School Exit Exam (CAHSEE) and California Standards Tests (CSTs) (separated as appropriate by subject matter and

grade level). These results were controlled for gender and race/ethnicity. In addition, information is presented on grade-to-grade promotion, continuation within program, and 12th-grade graduation rates.

For the current year of the study, we also examined the results through comparison with other groups, such as the school, district, or state.1 For the 2007–08 collection of achievement data, we explored options regarding comparison groups that could be used in the evaluation. The challenge is that for each site, the feasibility of a comparison group varies as the program varies—in terms of grade levels served, content focus, and school base (e.g., students in some sites come from a number of different schools). The primary analyses, then, consist of a set of comparisons. In addition to a gross comparison to the state as a whole, we made additional, more fine-grained comparisons. For sites that are programs within schools, we compared program participants to the school as a whole and to the district. For sites that are schools themselves (e.g., School of Digital Media and Design, Construction Tech Academy, Health Professions High School, Oakland Schools for the Arts, and Life Academy), we compared them to their district.

In order to explore selection bias, we compared the scores of 9th-grade English/language arts students who are 9th-grade participants in the Network sites to the scores of the comparison group(s). This comparison was only possible for a subset of schools that have 9th-grade students. This exploration provided some understanding of whether the students participating in Network sites are "similar" to the rest of the school's (or district's) student body for at least the last entering classes. We also considered the possibility of collecting baseline data, but they were generally not available. For example, for programs that include 9th-graders, those students' 8th-grade scores might serve as baseline. However, most schools have difficulty obtaining the earlier scores of their students, and there is not a comparable test to use across grade levels.

Qualitative Data

Unique design issues must be considered when evaluating the effectiveness of the grantees' multiple pathways programs, including variation in content focus, implementation, curricular integration, sources of support, and student recruitment and selection. The nature of this variation necessitated that, in addition to collecting quantitative measures such as achievement and non-cognitive data (e.g., on attendance, grade-to-grade promotion), we use more open-ended, in-depth

[1] In the state comparisons, we controlled for race/ethnicity.

qualitative methods to accurately capture what occurs daily in the programs and the factors that influence implementation. Given the continuum of desired outcomes that are portrayed in the logic model for these projects, it was necessary to collect data that would allow us to examine how students, teachers, classrooms, and sites function within the multiple pathways programs.

We collected qualitative data principally during site visits to each individual site. To do so, each site was contacted by a scheduler who followed guidelines for arranging the site visit with the principal contact at the site. Each site visit was scheduled for one and a half days with two researchers. The full day included a visit to the site during which the researchers conducted the following:

- An interview with the principal;
- An interview with the site coordinator;
- An interview with the counselor or other adjunct personnel;
- A focus group with program teachers;
- A focus group with student participants;
- An observation of four to eight academic and technical classes; and
- A review of documents.

During the half-day of the site visit, the researchers conducted interviews at the District office with those who had knowledge of the program—the CTE coordinator, Assistant Superintendent of Curriculum and Instruction, or similar personnel. If it was possible to arrange, researchers also visited workplace sites attended by students in the program. For most interviews and focus groups, we made a digital recording after obtaining permission of the respondents with the assurance given that recordings were only to be used to clarify notes.

The site coordinator provided key information about the history of the program, implementation strategies and challenges, program costs, and effects on teachers and students. The principal and district personnel provided the context for school and district support for the program as well as how it fit within the strategic plan for the school or district. Focus groups with teachers and students allowed us to explore program aspects in greater depth from the perspective of these two groups of participants. Teachers provided details about the design of curriculum and the delivery of instruction as well as their effects on their own practices and on student learning and behaviors. Feedback from students during these site visits proved to be critical because their comments provided some of the most definitive evidence for the effects that such programs can have on students—in particular, on their learning,

their attitudes toward schooling, their awareness of career options, and the development of their personal identity.

Instruments

We developed and used several measures to document the complexities of implementing the multiple pathways approach. These included an implementation rubric developed and refined by ConnectEd staff. We also developed an observation protocol that helped us assess fidelity of implementation against the domains and characteristics specified on the rubric (e.g., student engagement, rigorous curriculum, and work-based learning and projects). We further evaluated fidelity of implementation through interviews that probed into the other rubric domains. It was important to use high-quality measures of implementation to allow for analyses that would explore how varying levels and types of implementation relate to program outcomes. We used the program quality rubric developed by ConnectEd staff to delineate features of high quality multiple pathway programs as a primary reference and guideline. To ascertain ratings on the rubric, we used a combination of document review (e.g., course syllabi, program descriptions, instructional manuals, reports), interviews, and classroom observation.

Site visit set-up protocols included a fact sheet on each school and an overview document that was sent to each site to provide information regarding the site visit. (All of the tools or instruments mentioned in this section are included in the Appendix.) To develop instruments for use during site visits, we used or developed several tools. As is customary with our studies, we first developed a list of constructs for developing the instruments. The research questions were mapped against data collection methods, and we also created a matrix of the rubric domains against appropriate respondents. We developed semi-structured protocols for each of the interviews and for the two types of focus groups and an observation protocol for use during classroom visits.

The goal of the qualitative data analysis was to provide a clear and comprehensive picture of the implementation of the multiple pathways approach in its permutations at each site. To do so, we examined interview and focus group data using software designed for the analysis of qualitative data, seeking to discover patterns and themes across questions, respondents, and sites. We noted topics that were spontaneously generated during interviews and integrated these data with the results of the quantitative analyses, verifying some findings, permitting elaboration of other findings, and suggesting caution in interpreting others. The findings from the interviews and focus groups can reveal unanticipated findings and help provide more detailed interpretations.

To the extent possible, we analyzed associations between patterns in practices noted across the sites and outcomes noted in student achievement indicators. While these analyses involve a small number of sites, we attempted to tease out findings that are suggestive of promising practices and that can serve as a foundation for more rigorous studies.

Appendix C: Evaluation Instruments

MPR Associates, Inc.

IMPLEMENTATION STUDY OF THE *CONNECTED* DEMONSTRATION SITES

▲ BACKGROUND

In April 2006, the James Irvine Foundation created *ConnectEd: The California Center for College and Career* to promote innovative practice, policy, and research that would help to better define and expand multiple pathways in California's high schools. *ConnectEd* pursues this mission through three major programs of work: 1) pathway design and curriculum development, 2) policy analysis and advocacy, and 3) school improvement through professional development and related activities. Helping to integrate all three of these programs is the *ConnectEd* Network of Schools, a group of "demonstration" sites with an established track record in designing and implementing multiple pathways.

▲ OBJECTIVES

Through the Network of Schools, *ConnectEd* seeks to identify, support, and showcase robust, effective models of multiple pathways—comprehensive programs of academic and technical study organized around major industry sectors that prepare students for lasting success in college and career, both objectives and not just one or the other. As a condition of support, each grantee is expected to participate in a coordinated program of documentation and review designed to assist each of them in implementing their individual initiatives, as well as to inform *ConnectEd* and the larger education community in California about the effectiveness of various approaches to implementing multiple pathways. The evaluation has three goals: 1) to collect data to document the implementation and impact of the grantees' models; 2) to assist grant recipients in improving their individual initiatives, and 3) to assist *ConnectEd* in creating a larger "learning community," that builds a reliable knowledge base for promoting academically and technically challenging CTE elsewhere in California.

▲ DOCUMENTATION AND REVIEW

Throughout the review, MPR will work to limit the burden to district and school personnel. To gather the information needed to accomplish the goals of this project, MPR researchers will conduct site visits to interview selected program, school and district administrators, conduct focus groups of teachers and of students, and observe classes at each site. The interviews will last between 30 and 60 minutes, and each site visit will last between one and two days. In addition, we will ask the programs and schools to provide documents that can enhance our understanding of the multiple pathways model at that site.

Because of the complexity of the site visits, it is best if sites provide us with a point of contact, who can make logistical arrangements, such as setting up the focus group with teachers.

▲ AUDIENCE

Primary audiences for the review include the James Irvine Foundation, internal *ConnectEd* staff, and the sites themselves. In keeping with its goal to better define the essential attributes of multiple pathways and document the effectiveness of the overall strategy, the Foundation will be interested in knowing what features deemed to be critical to the effective implementation of a multiple pathways approach are evident in the demonstration sites and the extent to which multiple pathways appear to produce better learning outcomes than those achieved by more traditional high school offerings. *ConnectEd* staff will use the results to identify areas of strength and weakness for the demonstration sites and, thereby, identify areas to target for technical assistance. Technical assistance will be provided to grantees to assist them with planning and implementing effective program innovations—providing or brokering technical assistance in such areas as needs assessment, strategic planning, program and curriculum development, professional development, assessment, and accountability and evaluation. The grantees will benefit—as research is showing any educational entity does— from using data to understand the strengths and weaknesses of their programs and to identify ways in which they may want to modify their approach to ameliorate any weaknesses.

A secondary audience for the evaluation includes the larger educational community in California—especially policymakers and practitioners that are striving to establish effective multiple pathway programs. While the number of sites in the networks is currently very small, precluding the generalization of the findings to all sites implementing the approach advocated through the establishment of the network, there is much to be learned from an exploration of the strategies used in these sites to establish an effective model. The very fact that the sites differ so much in terms of grade levels served, content foci, and program structure affords the opportunity to conduct an implementation study to explore and identify features that may be common to all or many of them. Additionally, this work will be important to identifying promising practices that 1) can be explored further in follow-on studies of increased rigor, and 2) can be discussed among multiple pathway practitioners and policymakers.

▲ CONTACT INFORMATION

To learn more about this study, please contact Beverly Farr, the director of the project, at MPR Associates, Inc., (510) 849-4942 or email her at bfarr@mprinc.com.

FACT SHEET: Program/School/District Background Information

District Name:
School Name:
Program Name:

Teachers:	**School**				**Program**			
XX	2006-07		2007-2008		2006-07		2007-2008	
In Network:	Student Ethnicity							
X years	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Am. Indian or Alaska Native								
Asian								
Pacific Islander								
Filipino								
Hispanic								
African-American								
White								
Multiple/No response								
Enrollment Statistics								
Total Enrollment								
English Learners								
Eligible for Free/ Reduced-Price Meals								
Number of Students in Each Grade								
9th								
10th								
11th								
12th								
Ungraded								
High School level Performance								
12th grade graduates								
Graduates completing UC/CSU required courses								
STAR rates								
CAHSEE rates								
API								

Unique Characteristics

ConnectEd Evaluation Constructs

Program History
- Impetus
- Longevity
- Staffing
- Student participants

Program Design
- Primary focus
- Design elements (e.g., implementation of multiple pathways; industry partners)
- Curricular features (e.g., course sequence; problem-based learning; level of rigor)
- Integration
- Scheduling
- Postsecondary articulation

Implementation
- Instructional factors
- Work-based learning (e.g., authentic projects)
- Support (e.g., academic, counseling, personalized learning environment; school/district)
- Recruitment of students (e.g., targeted populations)
- Student engagement
- Systematic program evaluation
- Postsecondary tracking
- Parent involvement

Leadership
- Composition of team
- Background (e.g., credentials, experience)
- Pedagogical beliefs
- Implementation strategies (e.g., motivation, direction, guidance, monitoring)
- Program perceptions

Staff
- Selection/identification
- Background (e.g., credentials, experience)
- Training/professional development
- Collaboration
- Pedagogical beliefs/practices
- Program perceptions

Students
- Type (e.g, CTE, at-risk, college-bound)
- Selection process
- Participation factors
- Engagement
- Postsecondary plans
- Program perceptions

Matrix of Evaluation Domains, Questions, and Methods

Domain	Evaluation Questions	Review of program documentation	Achievement & Non-cognitive Indicators	Pre/post Survey to Program Designers	On-site visits to Demonstration Sites	Classroom /event Observations	Interviews with Program Designers	Student Focus Groups	Teacher Focus Groups
Program Variables	1. What are key program variables that characterize the implementation model at each of the sites?	✓		✓	✓	✓	✓	✓	✓
	a. What is the program structure of the model?	✓		✓			✓		
	b. In what ways does the curriculum reflect a rigorous, multiple pathway approach?	✓		✓			✓		✓
	c. What are the CTE course sequences in the curriculum?	✓		✓			✓		
	d. How is problem/project-based learning integrated in the curriculum?	✓		✓	✓	✓	✓	✓	✓
	e. How is postsecondary articulation accomplished?	✓		✓			✓		
	f. What preparation is offered through feeder middle schools?	✓		✓			✓		
	g. How is the learning environment personalized?	✓		✓			✓	✓	✓
	h. How are student's recruited/selected for the program?	✓		✓			✓	✓	✓
	i. Is there effective leadership for the program?			✓	✓		✓		✓
	j. What is the knowledge/experience level of teachers in the program?			✓	✓	✓	✓	✓	✓
	k. How effective is program instruction?			✓	✓	✓	✓	✓	✓
	l. To what degree do teachers collaborate?			✓	✓		✓		✓
	m. What is the nature/range/effectiveness of industry partners?	✓		✓			✓		✓
Factors Affecting Implementation	2. What are key factors that affect implementation?								
	a. What factors facilitate or detract from implementation?			✓	✓		✓	✓	✓
	b. What factors constitute major challenges to implementation, and what strategies have proved most effective in meeting these challenges?			✓	✓	✓	✓		✓

Domain	Evaluation Questions	Review of program documentation	Achievement & Non-cognitive Indicators	Pre/post Survey to Program Designers	On-site visits to Demonstration Sites	Classroom /event Observations	Interviews with Program Designers	Student Focus Groups	Teacher Focus Groups
Impact	3. To what degree does the multiple pathway approach as implemented in these demonstration sites seem to be associated with better student achievement, grade-to-grade retention, and high school completion?		✓	✓	✓		✓	✓	✓
	4. To what degree does the multiple pathway approach as implemented in these demonstration sites seem to be associated with better non-cognitive indicators (e.g., attendance, discipline referrals, dropout rates?		✓	✓	✓		✓	✓	✓
	5. In what ways does the multiple pathway approach as implemented in these demonstration sites affect teacher instructional practices and/or school policies and practices?		✓	✓	✓		✓	✓	✓
Costs	6. What are identifiable costs associated with implementing the approach in each of the demonstration sites?	✓		✓	✓		✓		✓

Elements of Multiple Pathways

	Principal/AP	Program Director	College and/or Career Guidance Counselor	Teachers	Students	Asst Super of Instruction	CTE Coordinator	Industry P artners	District Admin-istrators	Document Review	Classroom Observation
Academic and Technical Core Curricula											
Rigorous Curriculum/Challenging Academic Component										√	
CTE Course Sequence/Demanding Technical Component										√	
Integrated Problem/Project-Based Curriculum and Instruction				√						√	
Postsecondary Articulation		√	√	√							
Student Support Services											
Academic Support/Supplemental Services				√							
College and Career Guidance and Counseling			√		√						
Pathway Preparation and Orientation			√		√						
Parent Involvement					√						
Work-Based Learning Opportunities											
Work-Based Learning/Work-Based Learning Component								√		√	
Authentic Work-Based Projects/Work-Based Learning Component								√		√	
Program/School Culture											
Personalized Learning Environment				√	√						
School and Program Leadership										√	
Program/School Structure											
Inclusion of Targeted Student Population											
Teacher Collaboration	√			√							
Scheduling			√	√							
Established Industry Partners		√	√	√							
Program Evaluation											
Systematic Program Evaluation	√										
Student Engagement and Motivation											√
Postsecondary Tracking										√	

Sample Site Visit Schedule

Day One	Location	Person A	Person B
9:00-10:00	School office	• Interview with Principal, AP of Instruction (1/2 hour) • Interview with College and/or Career Counselor (1/2 hour)	Classroom observation
10:00-11:00	School	Interview with Program Director or Coordinator	Documentation review OR Classroom observation
11:00-12:00	School	Classroom observation	Curriculum or lesson plan review
12:00-1:00 (LUNCH)	School	Group interview with teachers	Group interview with teachers
1:00-2:00	School	Focus group with students (1/2 hour)	Classroom observation
2:00-2:30	Travel to partner site	• Interview with industry WBLO partner/mentor • Observation of internship/WBLO	Observation of internship/WBLO
2:30-4:00	Partner site		

Day Two	Location	Person A	Person B
9:00-11:30	District offices	Interviews with Asst Sup of Instruction, Director of CTE, others where appropriate	• Curriculum and other documentation review • Can also return to school for additional classroom observations, as required

ConnectEd Demonstration Sites Descriptive Study
Site Visit Protocols:

Principal and/or AP of Instruction

Information about school

1. What is your background experience (*i.e., educational preparation, years in position, other positions held)?*
2. How long have you been in your current role? How long at this school? At other schools? Do you have any experience working in Career and Technical Education? (*e.g., designing or teaching in a CTE program, working with business or industry partners*).
3. Can you give me a bit of background about your school? Over its history, have there been any particular events or changes in practice that have had significant impact?
4. What is the biggest challenge your school faces? (*e.g., poverty, lack of parent involvement, school violence, student mobility, recruiting teachers*)
5. Can you tell me a bit about the community from which your students come? Any significant changes that have had impact? (*e.g., demographic changes, poverty level, homeless children*)

School strategy and philosophy

6. Does your school have a strategic plan…or something similar? What are the most important goals in your school's strategic plan? What plans do you have or have you been carrying out to achieve those goals?
7. Could you tell me about a recent success you have had to advance student learning at this school?
8. Is your school using a particular data system? What are current practices for using data by teachers, counselors, administrators? (e.g., professional development, grade-level meetings, data access for teachers)
9. Do you provide time for teachers to understand and discuss different kinds of data, and if so how does that happen? How are the findings used to improve teaching and learning?
10. What are your personal beliefs about offering career technical education? About integrating it with academic education? In what form do you think it should be offered? To whom?

Questions about program[*]

1. How would you identify the role of the leadership team for the program? *(Probe: Who sits on the leadership team? What is their mission? How active/engaged do you think they are?)*

[*] *Note that you should find out how they refer to the program beforehand: use of "multiple pathways" phrase should be used judiciously since some will not know that term and/or may not refer to the program in that way. This is true for other interviews as well.*

2. What was your role in the development of the program, or do you provide oversight? In what ways is the program monitored or guided?

3. How was the program developed? How was it brought to the school? Is it unique to this school or a wider district program?

4. How do you see the program fitting into your overall school plan?

5. How does the program fit within the *district's* overall plan for the district?

6. What challenges do you face as an administrator in sustaining this program? In ensuring its high quality?

7. Are there unique costs associated with providing a program of this type? (*If so….* How have you made allowances for those costs?)

8. What is your overall assessment of the impact of the program? On what evidence do you base that assessment*? (Probe: Do you have evaluation reports? Who conducts the evaluations? How often do you evaluate? Can we have a copy of an evaluation report?)*

9. Can you identify any specific effects you think the program has had on the school/district as a whole, on teaching practices, or student attitudes, behavior, and achievement? *(Probe: Be aware that these could be positive or negative.)*

ConnectEd Demonstration Sites Descriptive Study
Site Visit Protocols:

Program Director

Information about interviewee

1. What is your background experience (i.e., educational preparation, years in position, other positions held)?
2. How long have you been in your current role? How long at this school? At other schools?
3. What is your background experience in Career and Technical Education?
4. What is your role in the development and implementation of the program? Who else provides leadership for the program?
5. What are your personal beliefs about offering career technical education? About integrating it with academic education? (*Probe: In what form do you think it should be offered? To whom?)*

Questions about program[*]

6. How was the program developed? How was it brought to the school? Is it unique to this school or a wider district program?
7. How are students selected for participation in the program? (Voluntarily? Recruited? Screened in any way? Requirements?)
8. How are teachers identified for teaching in the program? Are they given any particular training or professional development? (Probe: What is the range in teaching experience/interest in the program?)
9. Are there particular instructional approaches that are built into the program or that all/most teachers choose to/are required to use?
10. In what ways are CTE and academic content integrated in your program? (Probe: [If they use integrated curricula]: How are integrated curricula developed? How do teachers from different disciplines meet to share information?)
11. Do you implement any form of cohort scheduling for students in the program? [Note: only applicable to some programs, not Health Professions H.S., e.g.]
12. How are work-based learning opportunities built into the program? (Probe: Simply works like in internship, or does the work of the internship get integrated into classroom work in some way? Do you have other partnerships?
13. How would you describe the general level of student engagement in the program? Can you estimate a drop-out rate for the program? (Probe: What are some of the reasons that students drop out of the program?)

[*] *Note that you should find out how they refer to the program beforehand: use of "multiple pathways" phrase should be used judiciously since some will not know that term and/or may not refer to the program in that way. This is true for other interviews as well.*

14. Do you use any specific strategies for evaluating the program? (Probe: Do you use any formal or informal outcome measures to assess student learning or behavior/attitudinal changes?)
15. Do you collect information about students' postsecondary plans? Do you track students after they leave the program? The school? (e.g., whether they apply/matriculate at college? Attain employment or apprenticeship? Enlist in the military?)
16. Are parents involved in the program in any way? (e.g., kept informed, participate, support?)
17. Have there been any major changes in policy or practices either in the school or district in the last couple of years that have affected the program? What is the biggest challenge the program faces?
18. How do you see the program fitting into your school overall? Into the school's strategic plan?
19. What unique costs are associated with providing a program of this type? (If so… how have those costs been accommodated?)
20. What challenges do you face in sustaining this program? In ensuring its high quality?
21. What is your overall assessment of the impact of the program? On what evidence do you base that assessment? (Probe: Do you have evaluation reports? Who conducts the evaluations? How often do you evaluate? Can we have a copy of an evaluation report?)
22. Can you identify any specific effects you think the program has had on the school/district as a whole, on teaching practices, or student attitudes, behavior, and achievement? (Probe: Be aware that these could be positive or negative.)

Supplemental Services/Support

23. How would you assess the support the program is given by the school or the district?
24. Is there a dedicated counselor for students within this program? What is his/her role (e.g., career, college, personal, some combination of the three)?
25. What other support services are provided to students in the program? (e.g., remedial, logistical, psychological, college access)
26. How do program teachers communicate college or career options to students? (Probe if necessary for specifics: projects, required WLB, college fair, school or worksite visits, speakers)
27. What types of articulation agreements do you have with local PSE institutions? Are the offerings widely used?
28. What types of agreements do you have with local business or industry partners? Are the offerings widely used?

Educational/Instructional philosophy

29. Can you tell me about a recent success you have had in advancing student learning in the program at this school?
30. Do you provide time for teachers to understand and discuss different kinds of data? In what ways? How are the findings used to improve teaching and learning?

ConnectEd Demonstration Sites Descriptive Study
Site Visit Protocols:

College and/or Career Guidance Counselor(s)

Information about interviewee

1. What is your background experience (*i.e., educational preparation, years in position, other positions held*)?
2. How long have you been in your current role? How long at this school? At other schools?
3. What do you know about Career and Technical Education in general? At this school/district?

School strategy and philosophy

4. How many counselors are at this school? (If there are others…) How do you divide the caseload? What are the typical services that you provide? How much time do you spend in each? (Probe for amount of time spent on discipline.)
5. Do you do both college and career guidance? To which students do you provide such guidance? (Probe: Most counselors will say they do both, so probe for amount of time spent on one or the other.)
6. How important is college prep and/or career guidance at this school? How important is it to the students? To the parents? To the teachers? To the other counselors?
7. How is the master schedule built at this school? How are course offerings decided? (Probe: What "drives" the building of the master schedule: AP/IB? Honors? Athletics?)
8. Do you use any form of cohort scheduling (or does the person even know about this?)

Questions about program[*]

9. How familiar are you with the program? What do you know about it?
10. What, if any, contact do you have with teachers and administrators of the program?
11. How are students informed of this program? How are students selected/enrolled in the program?
12. How do you communicate college and career options to students? What sorts of service are made available (e.g., college fair, site visits, speakers)? Do opportunities offered to students in the multiple pathways program differ in any way from those offered to students throughout the school?
13. What types of articulation agreements do you have with local postsecondary institutions? Are the offerings widely used?

[*] *Note that you should find out how they refer to the program beforehand: use of "multiple pathways" phrase should be used judiciously since some will not know that term and/or may not refer to the program in that way. This is true for other interviews as well.*

14. What is your overall assessment of the impact of the program? On what evidence do you base that assessment?

15. Can you identify any specific effects you think the program has had on the school/district as a whole, on teaching practices, or student attitudes, behavior, and achievement? (Probe: Be aware that these could be positive or negati*ve.)*

ConnectEd Demonstration Sites Descriptive Study
Site Visit Focus Group Protocol:

Teachers

[Note: It is important that the group is comfortable and that they are fully aware of the purpose of the discussion and how the focus group will proceed. Information is to be solicited from teachers on the experiences they have had in the multiple pathways program. Be sure to allocate enough time to cover as many of the questions below as possible—though the ones that are in bold should be given priority.]

To begin, you need to inform the group about the study and obtain their oral consent. A script is given below. You can paraphrase, but make sure that you cover the essential points mentioned.]

Thank you for coming to talk to us this morning/afternoon. Our names are _____ and _____. We work for a research firm, MPR Associates in Berkeley, CA. Our organization has been contracted by the California Center for College and Career (ConnectEd) to learn how the ["multiple pathways model program"] is implemented at your site. This study will help the funders of the program and others who are interested in these models learn how the programs are implemented. We want to be clear that this is not an audit or inspection of the program or school. This is not a monitoring visit. We are an independent research firm collecting information that is of interest to the funding organization and will be of interest to a broad audience. We will include what we learn from these visits in a report to the Irvine Foundation.

Before we begin, I'd like to tell you that all information you provide will be kept confidential. Your name will not be mentioned in any of our reports. We will not share what you tell us with anyone inside or outside the school. The information you provide will only be used for this study. We would like to tape-record the session to be able to focus our attention on our conversation and to help us write our notes. No one else will listen to the recording. Does anyone from the group mind if we tape record this discussion? If at any point you would like me to turn off the recorder, just let me know.

Your participation is voluntary, so feel free to leave at any time and to pass on any questions you do not wish to answer. We encourage everyone to participate. We would really like to hear from each of you in order to get a good sense of different teachers' experiences with the multiple pathways model. We are interested in all your opinions and feelings. We only ask that people take turns speaking during the discussion and that you try not to talk too long on any one turn in order to give others a chance to speak. The session will last approximately _____ minutes in order to both gain the information we need about your experiences and to respect your time.

Do you have any questions before we begin?

Teacher Focus Group Questions

Information about interviewees **[Note: although the questions in this section are not in bold, you do need to get a sense of the groups' years of teaching, years at the site, and what they teach.]**

1. What is your background experience (i.e., educational preparation, years in position, other positions held)?

2. How long have you been in your current role? How long at this school? At other schools?)

3. What do you teach? How are you involved with this program?

4. Do you consider yourself an academic or a CTE teacher? Or both?

School structure

5. Do you meet together or with others to plan lessons? (How often?) To develop integrated activities? What strategies do you use (if any) to integrate CTE curriculum with academic curriculum?

6. Do you meet with middle school teachers to articulate curricula vertically? If so, how often? What types of strategies do you use?

7. Do you ever meet with postsecondary instructors to ensure your familiarity with their requirements and expectations and/or to develop integrated curricula? (Probes: Or do you have other ways to get that information? Do you even see a need to do that?) If you have, what are some ways you have developed for this integration?

8. How supportive is the school/district of this program? In what ways? (Probe: Principal/district interest/motivation; resource support; assistance with overcoming barriers)

9. How do you communicate with administration, each other, or parents when students are struggling?

10. What types of supports does the program offer to you? Have you had any professional development in teaching integrated courses?

11. When you teach pathway classes, are all of your students pathway students? Or do you have non-pathway students, too?

12. How can administration do more to support you in providing this program?

Questions about program[*]

13. Did you have a role in the development of the program? If so, what?

14. Were you asked/assigned to teach in the program, or did you volunteer? How did it come about?

15. Do you act as a mentor to students? In what way? For how many? How often do you meet with your mentees?

16. In what ways do teachers [in this program] collaborate with one another?

17. Can you provide an example of an integrated lesson that you taught or co-taught with a teacher from another discipline?

18. Do you work with business or industry partners? If so, in what ways?

19. What are the biggest challenges about teaching in this program? What would help you overcome those challenges?

20. What are the biggest benefits about teaching in this program? How has the program affected the way you teach?

21. What is your overall assessment of the impact of the program? On what evidence do you base that assessment?

22. Can you identify any specific effects you think the program has had on the school/district as a whole, on teaching practices, or student attitudes, behavior, and achievement? (Probe: Be aware that these could be positive or negative.)

[*] *Note that you should find out how they refer to the program beforehand: use of "multiple pathways" phrase should be used judiciously since some will not know that term and/or may not refer to the program in that way. This is true for other interviews as well.*

ConnectEd Demonstration Sites Descriptive Study
Site Visit Focus Group Protocol:

Students

Note: It is important that the group is comfortable and that they are fully aware of the purpose of the discussion and how the focus group will proceed. Information is to be solicited from students on the experiences they have had in the multiple pathways program. Be sure to allocate enough time to cover as many of the questions below as possible.

To begin, you need to inform the group about the study and obtain their oral consent. A script is given below. You can paraphrase, but make sure that you cover the essential points mentioned.

Thank you for coming to talk to us this morning/afternoon. Our names are _____ and _____. We work for a research firm, MPR Associates in Berkeley, CA. Our organization has been contracted by the California Center for College and Career (ConnectEd) to learn how the ["multiple pathways model program"] is implemented at your site. This study will help the funders of the program learn how the program is carried out. We are collecting research information to help the funder and others learn how these programs are done.

Before we begin, I'd like to tell you that all information you provide will be kept confidential. Your name will not be mentioned in any of our reports. We will not share what you tell us with anyone inside or outside the school. The information you provide will only be used for this study. We would like to tape-record the session to be able to focus our attention on our conversation and to help us write our notes. No one else will listen to the recording. Does anyone from the group mind if we tape record this discussion? If at any point you would like me to turn off the recorder, just let me know.

Your being here is voluntary, so you don't have to participate, and you can pass on any questions you do not wish to answer. We encourage everyone to participate. We would really like to hear from each of you, so we get a very good sense of different students' experiences with the multiple pathways model. We are interested in all your opinions and feelings. We only ask that you take turns speaking during the discussion and that you try not to talk too long in order to give others a chance to speak. The session will last approximately _____ minutes in order to both gain the information we need about your experiences and to respect your time.

Do you have any questions before we begin?

Student Focus Group Questions

Information about interviewees

1. What grade are you in?

2. How long have you been at this school? How long have you been involved with the [name of program]?

3. How did you learn about [name of program]? What made you interested in becoming a part of it?

4. What do you plan to do after high school? (Probe: educational, employment, military, apprenticeship plans)

5. Has being involved in this program changed your idea of what you want to do after high school?

6. Do you have a four- (or six-) year plan?
   If YES: *How was it developed? How often do you consult/review/revise it?*
7. Do you meet with a counselor or other adult at this [school or program] to talk about college or career options? To plan your schedule to meet your college or career goals?

Classes and engagement

8. What is different about school for you in [name of program] than for your friends who are not in [name of program]?

9. How are you different since you've been attending [name of program]?

10. What do you think are some of the positive benefits of [name of program]? What would you like to see changed?

11. Can you give me an example of a long-term project you've done or are doing in any of your classes? How often do you have that kind of assignment?

12. In your CTE class, how much emphasis is placed on learning math, reading and science? (Probe for examples of integration.)

13. How much emphasis in your academic courses is placed on relating content to the workplace or career/technical area? (*Probe for examples of integration.)*

14. Overall, do you feel your teachers present challenging concepts for you to learn?
15. Do you think you're more engaged in class activities in this program or in your other classes? (*Probe: or in classes they took prior to this program, if this is their entire program*)

16. Do you think what you're learning now in school will help you in your future (college or career)? In what ways?

17. Do you think you expanded our awareness in this program of career or educational opportunities that you can or want to pursue after high school?

18. Are you involved in an internship or some sort of learning experience in a workplace? If so, what? If not, do you have plans for one in the future?

19. Do you have a mentor? How often do you meet? What special assistance do you receive in planning your college or career?

20. Do your parents talk to you about school and your education, or are they involved with your education in other ways?

ConnectEd Demonstration Sites Descriptive Study
Site Visit Protocols:

Assistant Superintendent of Instruction and/or Director of CTE Programs

Information about district and school

1. What is your background experience *(i.e., educational preparation, years in position, other positions held)?*

2. How long have you been in your current role? How long at this school? At other schools? Do you have any experience working in Career and Technical Education?

3. Can you give me a bit of background about your school? Over its history, have there been any particular events or changes in practice that have had significant impact?

4. What is the biggest challenge your school faces?

5. Can you tell me a bit about the community from which your students come? Any significant changes in the recent past that have had impact?

District strategy and philosophy

6. Does your district have a strategic plan…or something similar? What are the most important goals in that plan? What plans do you have or have you been carrying out to achieve those goals?

7. Could you tell me about a recent success you have had to advance student learning in this district?

8. What are your personal beliefs about offering career technical education? About integrating it with academic education? (Probe: In what form do you think it should be offered? To whom?

Questions about program[*]

9. How do you see this program fitting into your district overall? Into the district's strategic plan?

10. Are there unique costs associated with providing a program of this type? (If so…. What are they? How have they been accommodated?)

11. What challenges do you face as an administrator in sustaining this program? In ensuring its high quality?

[*] *Note that you should find out how they refer to the program beforehand: use of "multiple pathways" phrase should be used judiciously since some will not know that term and/or may not refer to the program in that way. This is true for other interviews as well.*

12. What is your overall assessment of the impact of the program? On what evidence do you base that assessment?

13. What specific effects do you think the program has had on the school/district, teaching practices, student achievement, attitudes or behaviors?

ConnectEd Demonstration Sites Descriptive Study
Site Visit Protocols:

Community or industry partners

Information about interviewee

1. What business or industry do you represent? What is your background? Do you have a background in education?

2. How long have you been working with this program or school?

3. How did you become interested in working with this program?

4. What have you seen as benefits for you and for students working in your company?

5. Are there ways in which the school or program can better prepare students who are working in your business?

Questions about program[*]

6. Did you have a role in the development of the program? If so, what?

7. What is your ongoing role in the program? What contact do you have with teachers and administrators of the program?

8. If you have students that work in your company, what sorts of assignments do you give them? How have they responded to those assignments? What are their greatest strengths and weaknesses?

9. If you sit on an advisory board, what role do you play? Do you feel that your suggestions are taken seriously and incorporated when appropriate into the program?

10. What is your overall impression of the program? What do you base that on?

[*] *Note that you should find out how they refer to the program beforehand: use of "multiple pathways" phrase should be used judiciously since some will not know that term and/or may not refer to the program in that way. This is true for other interviews as well.*

ConnectEd Demonstration Sites Descriptive Study
Documentation Review

This is a list of potential documents to collect. Ask the sites for materials that will help us understand their program. You can provide the Documentation Review List for Sites as a list of ideas, rather than as a set of requirements.

Prior to visit:

- For all documents below, verify what is available online before requesting hard copies from school and/or district
- Obtain copies of as many documents as possible prior to visit
- Large-size files, such as curricula, might be better reviewed while on the school site – but see if you can obtain a curriculum overview prior to the visit
- Review all documents so that you can ask specific questions during site visit

Document to collect	**Purpose**
School strategic (or site) plan	The plan probably will not tell us what the school has done but it should show what they plan to do, how they are structured, and might include evidence of philosophy
Pathway budget	What are the costs associated with the program in each of the sites? (See research question)
Pathway model	Does pathway prepare students for a full range of PSE options?
Student recruitment materials	Are students recruited from a broad range of the overall population? Are there entry requirements?
CTE course sequence	Are sequences well developed, offer different strands or specializations, provide opportunities to take advanced courses?
Examples of curricula from multiple courses (esp integrated, if available)	Are academic and CTE curricula fully integrated? Are curricula rigorous?
Examples of student 4-year (or 6-year) plan – both template and copy of at least one student's plan, if available	Do students receive formalized, sequenced college (and career) counseling?
Examples of problem/project-based learning experiences	Are PBLE extended and well designed? Do they integrate academic and CTE curricula?
Master schedule and catalog	Are academic and CTE classes wholly integrated or offered as separate classes? Are pathway courses "pure"? Is master schedule flexible? Are pathway teachers (academic and CTE) given opportunity to collaborate?
College counseling office offerings such as list of field trips, speakers, visits to local colleges, surveys offered, workshops	How formalized is the advisory program? What support is offered to students?

Articulation agreements with Feeder middle schools Local community colleges Local 4-yr universities Technical training institutions	Does the school have formal partnerships with all these organizations? Do the PSE articulation agreements allow concurrent enrollment options? Do middle schools offer students opportunities to learn about the multiple pathways prior to enrollment in high school?
Evidence of parent involvement such as agenda or minutes from leadership team meetings; parent workshop programs; samples of communications with parents (e.g., progress reports)	Is an effort made to involve parents as active partners?
Evidence of business/industry partner involvement, such as agreements with local industries, minutes from advisory board meetings	Are industry partners actively involved in many aspects of the program?
Examples of work-based learning opportunities; information packet sent to students and parents about WBLO; sample reports or projects from students from their WBLO	Are internships designed to reinforce classroom learning? Do all students participate in them?
Examples or evidence of authentic work-based projects (agreements with industry partners, brochures, reports, newspaper articles, industry outreach materials) or other samples of student work	Do students have the opportunity to collaborate with industry partners in authentic industry projects?
Lesson plans for advisory periods	Does the school offer regular advisory periods? What sorts of things are done during advisory?
Examples of student progress reports	How do teachers communicate with administration, each other, students, and parents about potential problems? What supports are students offered when problems develop?
Agenda and minutes from "leadership team" meetings – *you may need to probe about how they define the leadership team. In general, we're looking for the policy group, not the day-to-day management group.*	Who sits on the leadership team? Does it involve administration, teachers, parents, and community partners? Do the minutes suggest that they actively make decisions? How do students participate in programmatic decisions?
Evaluation reports (non-ConnectEd) from prior years, if they have any	Who conducts the reports (outside entities versus internal compilers)? Are multiple measures used? Does the evaluation include more than just STAR test results? Does the evaluation include measures of programmatic elements?
Student post-program-completion follow-up reports (for those who have been around for at least one year)	Do pathway staff conduct formal follow-up of students? For how many years do they follow students? What information do they collect (e.g., PSE attainment)?

ConnectEd Demonstration Sites Descriptive Study
Classroom Observation Form

The goal of the classroom observations is to determine if students are receiving quality instruction in rigorous, standard-based academic and technical curricula. Learning experiences should be interdisciplinary. Teachers should show awareness of individual students' strengths and weaknesses. The learning environment should be supportive ("a close family atmosphere"). Students are consistently and actively engaged in projects and coursework.

Date: _____ Time in: _____ Time out: _____

Class: _____

School: _____ Teacher: _____

Layout of classroom:

In the space below, provide general comments about the lesson, such as a description of the activities, the purpose, and any extenuating circumstances.

Quality instruction						
Routine well established and automatic for students.	5	4	3	2	1	No routine is evident.
Ample evidence of planning, preparation.	5	4	3	2	1	Teacher is not prepared; no plans are evident.
Questions require use of higher-level skills: analysis, synthesis, and evaluation.	5	4	3	2	1	Teacher questions at knowledge level only; little demand for critical thinking.
Teacher reinforces and provides feedback.	5	4	3	2	1	Teacher provides little or no feedback or reinforcement.
Teacher asks probing questions, frequently challenges students to go deeper.	5	4	3	2	1	Students not challenged to explore tasks deeply.
Teacher has clear expectations, and students know what is expected of them.	5	4	3	2	1	Teacher shows low academic expectations for students. Standards not clear.
Student-centered learning						
Students are frequently involved actively in learning.	5	4	3	2	1	Students are rarely actively involved in learning.
Students work independently of the teacher and are self-motivated.	5	4	3	2	1	Students are dependent on the teacher for most learning.
Rigorous curricula						
The “theme” of the program (e.g., medical professions, manufacturing) is evident throughout the lesson.	5	4	3	2	1	The “theme” of the program is not incorporated at all.
Rigorous teaching and learning is derived from “complex and authentic” materials.	5	4	3	2	1	Teaching and learning is textbook-based and the sole source of information.
Tasks are challenging and rigorous.	5	4	3	2	1	Tasks lack rigor. Busy work and repetition are evident.
Example problems are at varying levels of difficulty.	5	4	3	2	1	Sample problems do not reflect varying levels of difficulty.
Multidisciplinary integrated learning experiences						
Teacher uses real world problems to help students understand concepts.	5	4	3	2	1	Concepts are delivered as wholly abstract forms, without connections to the real world.
Teacher refers to learning that takes place outside of school (e.g., field trips, learning from other adults, work-based learning)	5	4	3	2	1	Teacher makes no reference to learning that takes place outside of the school location.
Teacher makes frequent connections to other disciplines.	5	4	3	2	1	Teacher rarely or never makes connections to other disciplines.

Students are engaged in activities that require real-world skills, i.e., team- work, problem solving, communication.	5	4	3	2	1	Students mostly engaged in activities that do not require real-world skills, such as completing worksheets independently.
Teacher explicitly bridges CTE and academic vocabulary; supports with instructional strategies.	5	4	3	2	1	Little evidence of bridging of CTE and academic vocabularies; few strategies used to relate CTE and academic content.
Awareness of individual students' strengths and weaknesses						
Teacher uses a variety of strategies to assess students' learning of the lesson content.	5	4	3	2	1	Teacher does little or nothing to assess students' awareness of the lesson content.
Teacher provides additional support, such as peer group help or additional instruction, for students that need it.	5	4	3	2	1	Teacher provides no additional support for students who need it.
Teacher differentiates instruction by providing for multiple learning styles.	5	4	3	2	1	Instruction is delivered using one learning style (e.g., lecture). Students mostly working on same task in same way.
Lesson provides learning activities, projects, etc. that give students opportunities to demonstrate what they have learned.	5	4	3	2	1	No learning activities, projects, that give students opportunities to demonstrate what they have learned.
Supportive learning environment						
Atmosphere of mutual respect for learning and each other.	5	4	3	2	1	Disrespect for learning and for each other is apparent.
Constructive learning environment with no discipline problems.	5	4	3	2	1	Students exhibit inappropriate behavior.
Classroom is attractive and stimulating. Current student work displayed on the walls.	5	4	3	2	1	Classroom is uninviting. No or low-level student work is displayed.
High levels of student engagement						
Students are enthusiastic about the lesson.	5	4	3	2	1	Students do not appear to be excited about the lesson.
Students are continually engaged; evidence might include discussing or working on projects.	5	4	3	2	1	Students appear bored, passive, disengaged—talking or sleeping.

Questions for teacher (if available after observation):

1. Was this lesson typical of what you do with this class of students? (*Probe: Was students' involvement with the lesson typical of what you usually see?*)

2. How did this lesson fit within your curriculum? How was the approach used (or how were the activities) similar to or different from what you usually do?

3. Learning goals: What were your learning goals for the activities I observed?

4. [If you didn't see any…] What assessment strategies or activities do you typically use to assess what students learn?

5. Are there complementary activities for this lesson, i.e., related activities, follow-up? What's next?

Comments and Notes:

Multiple Pathways Program Assessment Rubric

A RUBRIC FOR

Self-assessing program quality.

Developing action plans for improvement.

Measuring progress.

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Using This Rubric

Without question, it is challenging to envision, establish, and continuously improve a pathway that meets the varied needs of a diverse group of students. Doing so typically involves a *design team*, including academic and career-technical teachers, counselors, administrators, parents, and students as well as postsecondary, business/industry, and community partners.

This rubric was created to help design teams as they work together to develop and improve a comprehensive pathway program of study. As with any program implementation effort, it is difficult to focus on all elements simultaneously. As a result, certain elements will emerge as stronger than others. However, with constant monitoring and continued planning, it is possible to build a pathway that reaches the "operational" or "fully developed" level. This *Multiple Pathways Program Assessment Rubric* is designed to help schools focus their attention on the various elements of a quality pathway program and to foster discussions at each stage of the pathway's development.

Specifically, the *rubric* can serve as a tool for…

- **Visioning**—design team members can gain a common understanding of what a fully developed pathway looks like;
- **Self-assessment**—design teams can analyze the current status and quality of each element of the pathway program;
- **Planning**—design teams can identify and set priorities for areas of improvement from which to develop annual work plans; and
- **Evaluation**—external evaluators can assess program quality.

Developing a pathway requires substantial time, collaboration, and thought. It is not an easy process; however, the result generally pays great dividends for students through greater engagement in high school and increased postsecondary options; for teachers through job satisfaction and the approach's positive influence on students; for schools through improved student achievement; and for institutions of higher learning and employers through better prepared students and employees.

We welcome comments and suggestions to improve the usefulness of the *rubric*. Good luck with your pathway development!

What Is a Pathway?

A *pathway* is a comprehensive program of high school study that connects learning in the classroom with real-world applications outside of school. It integrates rigorous academic instruction with a demanding career technical curriculum and field-based learning—all set in the context of one of California's 15 major industry sectors, such as business and finance, building and environmental design, biomedical and health sciences, engineering, information technology, manufacturing, or arts, media, and entertainment.

Organizing Principles

There is no one right way to design and implement a pathway. But whatever the strategy, designing a pathway requires attention to four organizing principles:

1. **Pathways prepare students for postsecondary education and career**—both objectives, not just one or the other.
2. **Pathways connect academics to real-world applications** by integrating challenging academics with a demanding career and technical curriculum.
3. **Pathways lead to a full range of postsecondary opportunities** by eliminating tracking and keeping all options open after high school.
4. **Pathways improve student achievement.**

Essential Components

In addition to the organizing principles, a well-designed pathway consists of four essential components:

1. A challenging **academic component** prepares students for success—without remediation— in California's community colleges and universities, as well as in apprenticeships and other postsecondary programs.
2. A demanding **technical component** delivers concrete knowledge and skills through a cluster of four or more technical courses.
3. A **work-based learning component** offers opportunities to learn through real-world experiences that complement classroom instruction.
4. **Supplemental services** include counseling as well as additional instruction in reading, writing, and mathematics to help students succeed with a challenging program of study.

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Transforming today's education for tomorrow's economy

Multiple Pathways Program Assessment Rubric

School Name: _____

Program Name: _____

Note: If there is no evidence of a specific element, assign a score of "0."

Elements of Model Multiple Pathways	Foundation Pieces 1	Emerging Pathway 2	Operational Pathway 3	Fully Developed Pathway 4	Score 0–4
ACADEMIC AND TECHNICAL CORE CURRICULA					
Rigorous Curriculum[1,B]	Only some academic and technical courses are standards-based, and students' postsecondary education and employment options may be limited.	Although students are not intentionally tracked, some, but not all, receive instruction in rigorous, standards-based academic and technical curricula. Such instruction allows some students to have access to a full range of postsecondary and career options.	ALL pathway students receive instruction in rigorous, standards-based academic and technical curricula that ensures access to both career opportunities and a full range of postsecondary options, including two- and four-year colleges and universities, apprenticeships, the military, and formal career training.	ALL pathway students receive quality instruction in rigorous, standards-based academic and technical curricula that ensures access to, and readiness for, both career opportunities and a full range of postsecondary options, including two- and four-year colleges and universities, apprenticeships, the military, and formal career training. Students understand the principles of effective oral, written, and multimedia communication. Students are encouraged to complete advanced courses.	
CTE Course Sequence[2,B]	Students may choose from several CTE courses that are not necessarily part of a planned sequence. Course quality may vary.	A sequence of two to three CTE courses in the same general industry sector is available to students and presented as a pathway, but it may not be well-developed and of high quality.	The pathway includes a single identified sequence or cluster of well-developed, high-quality CTE courses, perhaps with a couple of advanced or capstone courses offered by the ROP. Where appropriate, CTE courses have been submitted to UC for "a–g" approval.	The pathway includes several well-developed sequences or clusters of high-quality, standards-based CTE courses that provide students with options to pursue different strands or specializations. Advanced and capstone courses take advantage of ROP and/or community college offerings and resources. Where appropriate, CTE courses meet UC "a–g" requirements.	
Integrated Problem/ Project-Based Curriculum and Instruction[1,3,4,B]	Students participate in limited, sporadic problem/project-based learning experiences in either CTE or academic classes.	Students participate in quality problem/project-based experiences in CTE and academic classes that are not necessarily integrated.	Students participate in a few shorter, interdisciplinary problem/project-based learning experiences.	Students participate in multiple, extended, well-designed interdisciplinary problem/project-based learning experiences that seamlessly integrate standards-based academic and technical curricula. Ideally, no separation exists between academic and career-technical curriculum and classes. All classes have fully integrated curriculum, so that they cannot readily be identified as career-technical or academic.	
Postsecondary Articulation[F]	Students visit postsecondary institutions and are informed about available programs. Based on an individual initiative, some students may pursue concurrent enrollment.	One or two courses are articulated to a local community college and are taken by some students. Concurrent enrollment may be an option for students, but it is not formalized in the pathway design.	A tech prep partnership has been established with local community colleges to enable students to earn credit for pathway courses. These agreements may include opportunities for concurrent enrollment and associated credit.	Formal partnerships have been developed to articulate the pathway program with local four-year universities, community colleges, and postsecondary training institutions. Pathway articulation incorporates concurrent enrollment options and allows students to earn substantial postsecondary credit for pathway completion.	

Elements of Model Multiple Pathways	Foundation Pieces 1	Emerging Pathway 2	Operational Pathway 3	Fully Developed Pathway 4	Score 0–4
STUDENT SUPPORT SERVICES					
Academic Support[D]	Some support services are available to students. Although students know about these services, little effort is made to encourage students to take advantage of them.	All students have available to them a range of support services that may include supplemental instruction in English and math (e.g., additional coursework, tutoring, etc.).	Pathway staff assumes responsibility for monitoring student progress and helps students access a variety of support services to maximize opportunities for success in the pathway program. Services may include supplemental instruction in English and math (e.g., additional coursework, tutoring, etc.).	Each student is assigned to a staff member who serves as his/her "mentor" and advisor. This staff member monitors student progress, communicates with the student's parent/guardian, and ensures that the student takes advantage of available support services, as needed, to maximize opportunities for success in the pathway program. All students have available to them a range of support services that may include supplemental instruction in English and math (e.g., additional coursework, tutoring, etc.).	
College and Career Guidance and Counseling[6,C]	The pathway does not have a designated counselor. College and career guidance materials are available through a college and career center, but services may be limited to those students who take the initiative to seek them.	The pathway does not have a designated counselor. School counselors and pathway teachers provide students with some college and career counseling to support postsecondary transition.	The pathway has a designated counselor who is familiar with the unique needs of the program and its students. All students receive some college and career counseling to support postsecondary transition, but those services and opportunities may be intermittent and inconsistent.	The pathway has a designated counselor who is familiar with the unique needs of the program and its students. A formalized advisory program during the regular school day provides structure for delivery of guidance services. All students receive formalized, sequenced college and career counseling that includes career awareness, career interest surveys and inventories, industry-relevant field trips, and visits to colleges and universities. All students receive guidance and assistance with college applications, testing, and financial aid.	
Pathway Preparation and Orientation[C,F]	Brochures or other printed materials are distributed to middle school students through mass mailing.	Pathway students and staff may make presentations to middle school students as a way to introduce pathway options and/or distribute brochures or other printed materials. No formal orientation is offered.	Some feeder middle schools offer a series of career exploration activities and/or orientation to available high school pathways via presentations or printed material. The pathway offers limited orientation for students once they arrive on the high school site.	All feeder middle schools offer well-designed, comprehensive career exploration programs that inform students about the pathway options available in nearby high schools. The pathway offers summer orientation and other transition services intended to ensure smooth entry into high school and the pathway program.	
Parent Involvement	There is little evidence of active parent involvement. Parents support school activities by attending functions and/or fundraising.	A small group of self-identified parents participate in pathway planning and implementation. Other parents may be generally supportive, but their involvement is limited to a handful of parent-specific functions.	Through formalized structures, parents are encouraged to participate in various aspects of the pathway program. There are regular opportunities for parents to come to the school site, view student projects, learn about pathway activities, and provide critical feedback.	A strategic effort is made to engage parents as active partners in their student's education. Through formalized structures, parents of pathway students are actively involved in program development, implementation, and leadership. Through established support systems, parents are aware of their students' performance and provided with tools and information to support student success.	

Elements of Model Multiple Pathways	Foundation Pieces 1	Emerging Pathway 2	Operational Pathway 3	Fully Developed Pathway 4	Score 0–4
WORK-BASED LEARNING OPPORTUNITIES					
Work-Based Learning[1,5,B,D]	Some students have the opportunity to participate in work-based learning experiences, but they are neither available to all students nor offered regularly. There is no connection to pathway coursework or monitoring of quality of placement.	Some students participate in at least some worksite visits and/or job shadows, but the opportunities may be hit-and-miss. More intensive internships may be available to a handful of students. Overall, there is little structure, coordination, monitoring of quality, or connection to coursework.	All students participate in at least a couple of work-based learning experiences, including an internship, with or without intentional connection to pathway courses. Structure and coordination is emerging. Quality of placement and experience may not be monitored and evaluated.	All students participate in a coordinated, structured, and monitored sequence of work-based learning experiences that are intentionally designed to reinforce the academic and technical pathway coursework. These experiences are sequenced through the years from speakers, field trips, mentors, and job shadows, to student-run enterprises, virtual apprenticeships, and internships. Every student participates in at least one internship that is intentionally designed to reinforce classroom learning. Quality is monitored regularly.	
Authentic Work-Based Projects[1,3,4,5,B]	Students work on fictitious school-based projects and have no contact, guidance, or support from industry professionals.	Students work on industry projects similar to those found in industry or school projects that are interdisciplinary, created by the teacher(s), and have limited guidance or support from industry professionals.	Students work on well-designed projects similar to those found in industry. Some guidance and support is provided by professional mentors/contacts.	Pathway students collaborate with industry partners to complete complex, authentic, and interdisciplinary industry projects, working both at school and in the community. Industry professionals guide and support student teams and play a role in project evaluation.	
PROGRAM / SCHOOL CULTURE					
Personalized Learning Environment[G]	Teachers recognize that students have different learning needs and provide differentiated instruction in their classrooms.	Teachers make every effort to know students and care about their academic success. Because students remain together as a cohort for three or more classes, teachers have the opportunity to meet together to discuss student progress and to work together to identify and address individual student needs.	Young people and adults in the school know each other well. Every student is known well by at least one adult in the school who ensures that the student's learning needs are met. Personalization is a clear priority that is reflected in reallocating resources to provide smaller classes, looping so that teachers remain with students for more than one year, and/or reducing pupil loads by reorganizing the school day (e.g., 4x4 schedule).	A clearly structured, personalized learning environment supports the development of meaningful, sustained relationships between students and teachers and creates a close family atmosphere. Teachers know students' individual strengths and challenges and provide academic support, as needed, in a timely fashion. The school is intentionally structured to support the development of meaningful, sustained relationships between students and adults. An advisory period provides regular opportunities for guidance, support, and home/school communication.	
School and Program Leadership[A,D]	A program director, principal, or lead teacher is dedicated to the program and motivated to ensure pathway development but he/she receives little or no support or buy-in from others.	A few dedicated individuals drive the program and are motivated to ensure pathway development; the remaining staff are mostly supportive but not actively engaged.	A motivated, effective pathway program director is supported by site administration and some pathway teachers; other pathway staff cooperate without creating barriers to effective pathway implementation. Students have input into decisions.	A strong leadership team consisting of the school's principal, program director, teachers, and business/community partners collaborate effectively in planning, implementing, and sustaining the pathway program. All are motivated to develop and maintain a high-quality program. Students participate in programmatic decisions.	

Elements of Model Multiple Pathways	Foundation Pieces 1	Emerging Pathway 2	Operational Pathway 3	Fully Developed Pathway 4	Score 0–4
PROGRAM / SCHOOL STRUCTURE					
Inclusion of Targeted Student Population[G]	Students enroll in, or are placed in, a pathway program with no explicit attention paid to diversity or balanced representation.	An informal network of teachers, counselors, and/or other staff recruits students who they believe may benefit from the program. Any interested student is accepted if space is available. No formal application or interview process is required.	Pathway students are selected randomly from a pool of applicants with a clear goal of representing a diverse group of students including at-risk, minority, low-income, and "non-traditional" students.	A strategic effort is made to identify, target, and recruit a broad range of the student population including at-risk, minority, and low-income youth as well as non-traditional students (e.g., females for construction careers). No GPA entry requirement exists, and no students are excluded because of prior low achievement.	
Teacher Collaboration[G,H]	Interested and willing CTE and academic teachers consult periodically on curriculum and instruction. Curriculum integration may occur sporadically or in one direction (e.g., academics infused into CTE).	Interested and willing CTE and academic teachers find time to create a few integrated lessons, units, or projects, but school and district support structures are not in place to encourage them as a regular practice.	Although the school schedule does not necessarily accommodate it, the team of CTE and academic pathway teachers make time to meet to plan integrated, interdisciplinary curriculum and program activities and to discuss student progress and strategies to support struggling students.	All CTE and academic pathway teachers are given ample, structured time during the regular school day to meet as a pathway team to plan integrated, interdisciplinary curriculum and program activities, discuss student progress, and develop strategies to support struggling students.	
Scheduling[G]	Pathway staff has adjusted to the constraints of a six-period day or other schedule that does not meet program needs. Non-pathway students can take pathway courses.	In developing the school's master schedule, the needs of the pathway(s) are given special consideration. Some, but not all, pathway courses are "pure."	The school has adopted a 4x4 block or some other flexible schedule that accommodates the needs of pathways and other programs. CTE and some academic courses are "pure."	The pathway maintains a specialized, flexible schedule that meets its unique programmatic needs. All pathway courses are "pure," that is, made up of pathway students only.	
Established Industry Partners[E,G]	One or two industry partners provide information, guest speakers, and field trip opportunities.	Some industry partners participate in pathway activities on an intermittent basis, but there is no long-term commitment to specific activities or ongoing pathway development.	Industry partners serve on an advisory board and provide work-based learning experiences, including job shadowing and internships. Some may be involved in other aspects of pathway development and implementation.	Industry partners are actively involved in all aspects of pathway development and implementation, which may include serving on an advisory board, assisting with curriculum development, offering substantial and frequent work-based learning opportunities, and advising students on projects.	

Elements of Model Multiple Pathways	Foundation Pieces 1	Emerging Pathway 2	Operational Pathway 3	Fully Developed Pathway 4	Score 0–4
PROGRAM EVALUATION					
Systematic Program Evaluation[I]	Program success is measured predominantly by anecdotal data. Pathway staff is considering more formal measures of evaluation, but no concrete plan has been developed.	Pathway staff examines enrollment, attendance, and anecdotal evidence such as student satisfaction to evaluate program success. Plans and systems are being developed to include standard measures of student achievement in program evaluation.	Pathway staff uses data and other standard measures of achievement, such as API, CST, CAHSEE, and graduation and dropout rates, to evaluate program success and to guide planning for pathway improvement.	School or district has established a formalized protocol by which to evaluate quality indicators of pathway programs.	
Student Engagement and Motivation	Most students are in the program by choice but seem indifferent about the program and coursework.	Students consider the program to be "fun" and like their classes and teachers, but few students can articulate how their learning is relevant to the world outside of the classroom or their postsecondary plans.	Most students are engaged in projects and coursework, see a clear relationship to the world outside of the classroom, and generally appreciate what the program offers.	All students are consistently and actively engaged in projects and coursework, see a clear relationship between classroom learning and future education and employment opportunities, and freely express how much they value being part of the program.	
Postsecondary Tracking[F,I]	The pathway program has identified a need to track the postsecondary success of its students, but has not yet garnered the resources and/or taken action to do so.	The pathway program requests alumni to self-report postsecondary data.	Pathway staff conducts a formal follow-up of students for one or two years after high school graduation and uses data to make program improvements.	Pathway staff conducts a formal follow-up of students for at least four years after high school graduation and uses data collected to continuously improve the program. Evaluation ascertains postsecondary program completion, income, and other key indicators of success.	

TOTAL SCORE =

CALCULATE YOUR PATHWAY AVERAGE SCORE (TOTAL SCORE / 19) =

Alignment with California Career Technical Education Foundation Standards

[1] Standards 1.0, 2.0

[2] Standards 10.0

[3] Standards 5.1, 5.2, 5.3

[4] Standards 9.1, 9.3, 9.4

[5] Standards 7.1, 7.2, 7.3, 7.4

[6] Standards 3.1, 3.2, 3.3

Alignment with 11 Elements of High Quality CTE System defined in the 2008–2012 California State Plan for Career Technical Education (Approved March 2008)

[A] Element: Leadership at all levels

[B] Element: High quality curriculum and instruction

[C] Element: Career exploration and guidance

[D] Element: Student support and student leadership development

[E] Element: Industry partnerships

[F] Element: System alignment and coherence

[G] Element: Effective organizational design

[H] Element: Skilled faculty and professional development

[I] Element: Evaluation, accountability, and continuous improvement

Glossary of Terms

Multiple Pathways—Pathways are comprehensive, multi-year programs of academic and technical study, which are organized around a career theme, that prepare high school students for a full range of post-graduation options—including two- or four-year college, apprenticeships, formal job training, and military service. Pathways connect learning in the classroom with real-world applications outside of school by incorporating four core components:

A challenging **academic component** that prepares students for success—without remediation—in California's community colleges and universities, as well as in apprenticeships and other postsecondary programs.

A demanding **technical component** that delivers concrete knowledge and skills through a sequence or cluster of four or more technical courses.

A **work-based learning component** that offers opportunities to learn through real-world experiences.

Supplemental services that include counseling as well as additional instruction in reading, writing, and mathematics to support students in a challenging program of study.

Apprenticeship—Multi-year, formalized programs that combine on-the-job training (OJT) with related classroom instruction and typically prepare individuals for occupations in the skilled trades and crafts.

Articulation—The practice of aligning curriculum from one educational segment to another to encourage a seamless transition between courses, grades, and/or educational institutions. Most commonly, high school courses articulate to community college courses so that high school students can earn college credit.

Curriculum Frameworks—Blueprints for implementing the state content standards; frameworks identify instructional programs, strategies, and materials, professional development, and assessments that are aligned with the standards.

Dual Enrollment—High school students enroll in college courses, which may be offered either on the high school or college campus, and earn college credit.

Integrated Curriculum—A series of conscious and informed strategies used to connect different academic subjects and career technical course content so that what is learned in one discipline is reinforced in the other disciplines over an extended period of time.

Project-Based Learning—A systematic teaching method that engages students by focusing on a complex question or problem and having them investigate answers to that problem over an extended period of time, often by creating presentations and products.

Standards—Statements that define what students should know and be able to do at each grade level.

Tech Prep—An educational program that typically combines at least two years of secondary career-technical education with two years of postsecondary education and leads to a postsecondary certificate or degree.

Work-Based Learning—An educational approach that links learning in the workplace to that which is learned in the classroom to engage students more fully in learning and to intentionally promote exposure and access to future educational and career opportunities.

Multiple Pathways Program Assessment Rubric
Arlene LaPlante
Roman Stearns

ConnectEd was founded with a grant from The James Irvine Foundation.

ConnectEd's mission is to support the development of multiple pathways by which California's young people can complete high school, enroll in postsecondary education, attain a formal credential, and embark on lasting success in the world of work, civic affairs, and family life.

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Appendix D: Achievement Data Tables for Network Overall

Table D1: Overall distribution of students within the ConnectEd Network sites, 2007–08

	Number	Percentage
Total	5501	100.0
School		
BITA	155	2.8
BuildSF	19	0.3
CART	1195	21.7
CTA	448	8.1
DMD	421	7.7
ESGVROP	1241	22.6
HCA-Placerville	164	3.0
HCA-Palmdale	486	8.8
HPHS	400	7.3
ISA	167	3.0
Life Academy	239	4.3
MPTA	147	2.7
OSA	194	3.5
PLTW-Barstow	49	0.9
PLTW-Lancaster	67	1.2
STaRS	109	2.0

Table D2: Gender distribution of students within the ConnectEd Network sites, by site, 2007–08

	Total	Male		Female	
	Number	%	#	%	#
Total	5500	50.7	2789	49.3	2711
School					
BITA	155	83.9	130	16.1	25
BuildSF	19	68.4	13	31.6	6
CART	1195	49.2	588	50.8	607
CTA	448	77.0	345	23.0	103
DMD	421	47.7	201	52.3	220
ESGVROP	1241	53.1	659	46.9	582
HCA-Placerville	164	33.5	55	66.5	109
HCA-Palmdale	486	21.0	102	79.0	384
HPHS	400	32.0	128	68.0	272
ISA	167	59.9	100	40.1	67
Life Academy	239	39.3	94	60.7	145
MPTA	147	79.6	117	20.4	30
OSA	194	33.0	64	67.0	130
PLTW-Barstow	48	85.4	41	14.6	7
PLTW-Lancaster	67	91.0	61	9.0	6
STaRS	109	83.5	91	16.5	18

Table D3: Racial/ethnic distribution of students within the ConnectEd Network sites (condensed categories), 2007–08

	Hispanic		White		Af-Amer		Asian		All Other	
	%	#	%	#	%	#	%	#	%	#
Total	42.7	2336	29.2	1595	11.8	645	11.7	638	4.6	251
School										
BITA	76.8	119	17.4	27	0.6	1	1.9	3	3.2	5
BuildSF	42.1	8	10.5	2	5.3	1	10.5	2	31.6	6
CART	27.4	327	54.0	645	3.4	41	13.8	165	1.4	17
CTA	53.8	241	17.4	78	13.6	61	10.5	47	4.7	21
DMD	33.7	142	23.8	100	17.8	75	17.3	73	7.4	31
ESGVROP	50.6	627	21.3	264	4.1	51	18.1	224	6.0	74
HCA-Placerville	9.3	15	84.5	136	3.1	5	0.0	0	3.1	5
HCA-Palmdale	69.8	338	12.4	60	12.2	59	4.8	23	0.8	4
HPHS	33.0	131	18.4	73	37.5	149	6.5	26	4.5	18
ISA	46.7	78	25.1	42	26.3	44	1.2	2	0.6	1
Life Academy	73.4	168	0.9	2	11.4	26	10.0	23	4.4	10
MPTA	16.3	24	31.3	46	14.3	21	27.2	40	10.9	16
OSA	11.2	20	13.5	24	55.1	98	2.8	5	17.4	31
PLTW-Barstow	45.8	22	41.7	20	6.3	3	0.0	0	6.3	3
PLTW-Lancaster	37.3	25	47.8	32	9.0	6	1.5	1	4.5	3
STaRS	46.8	51	40.4	44	3.7	4	3.7	4	5.5	6

Note: "All Other" includes those students identifying as American Indian/Alaska Native, Pacific Islander, Filipino, and Multi-ethnic.

Table D4: Grade level distribution of students within the ConnectEd Network sites, 2007–08

	9th		10th		11th		12th	
	%	#	%	#	%	#	%	#
Total	15.5	852	17.6	967	25.0	1375	41.9	2307
School								
BITA	14.2	22	30.3	47	28.4	44	27.1	42
BuildSF	26.3	5	0.0	0	21.1	4	52.6	10
CART	0.0	0	0.0	0	55.8	667	44.2	528
CTA	30.6	137	31.3	140	20.1	90	18.1	81
DMD	31.1	131	28.5	120	21.4	90	19.0	80
ESGVROP	0.0	0	0.0	0	0.0	0	100.0	1241
HCA-Placerville	14.0	23	43.9	72	18.9	31	23.2	38
HCA-Palmdale	23.9	116	40.7	198	21.6	105	13.8	67
HPHS	42.3	169	29.3	117	28.5	114	0.0	0
ISA	19.2	32	35.9	60	18.6	31	26.3	44
Life Academy	25.1	60	26.8	64	25.5	61	22.6	54
MPTA	36.1	53	28.6	42	17.7	26	17.7	26
OSA	22.7	44	26.3	51	22.7	44	28.4	55
PLTW-Barstow	22.4	11	22.4	11	38.8	19	16.3	8
PLTW-Lancaster	14.9	10	25.4	17	38.8	26	20.9	14
STaRS	35.8	39	25.7	28	21.1	23	17.4	19

Table D5: Grade level attendance rates of students within the ConnectEd Network sites, 2007–08

	9th		10th		11th		12th	
	%	s.d.	%	s.d.	%	s.d.	%	s.d.
Total	95.1	7.1	94.7	6.9	94.3	7.4	93.6	8.4
School								
BITA	92.0	6.4	91.3	8.2	91.1	9.4	90.8	7.8
BuildSF	94.7	6.6	—	—	86.4	14.9	88.6	8.0
CART	—	—	—	—	—	—	91.4	8.4
CTA	96.5	3.8	95.8	6.3	95.1	7.2	96.6	3.7
DMD	95.4	7.2	95.1	7.0	95.1	5.9	98.3	2.5
ESGVROP	—	—	—	—	—	—	93.3	8.8
HCA-Placerville	94.8	6.7	95.2	5.0	95.0	4.7	93.2	6.6
HCA-Palmdale	95.2	6.0	93.8	7.7	92.5	10.8	93.9	5.9
HPHS	92.2	10.8	91.5	9.7	93.3	7.8	—	—
ISA	97.4	2.3	94.7	4.2	95.4	4.7	91.1	10.2
Life Academy	98.0	2.9	98.3	2.5	97.0	3.9	98.5	2.4
MPTA	95.5	3.4	97.2	2.9	96.7	3.3	96.8	3.4
OSA	94.7	9.1	96.2	3.3	94.3	4.5	93.8	15.0
PLTW-Barstow	92.8	5.5	93.3	4.1	92.2	6.2	92.5	4.3
PLTW-Lancaster	96.5	4.4	96.9	6.7	94.5	6.1	95.5	5.0
STaRS	96.8	3.7	96.9	3.0	96.8	2.6	95.4	4.1

s.d.: standard deviation

Table D6: Grade-to-grade promotion, graduation, and continuation rates of students within the ConnectEd Network sites, 2007–08

	Promotion from one grade to the next			Graduation rate	Graduation w/ a-g reqs	Yearly continuation in program		
	9th %	10th %	11th %	12th %	12th %	9th %	10th %	11th %
Total	96.0	90.4	97.7	98.3	34.9	91.7	81.3	72.8
School								
BITA	72.7	68.1	54.5	85.7	4.8	—	—	—
BuildSF	80.0	—	100.0	100.0	30.0	—	—	—
CART	—	—	100.0	96.8	43.9	—	—	56.7
CTA	100.0	100.0	100.0	97.5	49.4	100.0	100.0	100.0
DMD	84.7	85.0	93.3	98.8	48.8	96.2	98.3	96.7
ESGVROP	—	—	—	100.0	20.5	—	—	—
HCA-Placerville	100.0	100.0	100.0	97.1	51.5	26.1	47.2	45.2
HCA-Palmdale	95.7	70.7	97.0	95.3	90.9	95.7	54.5	66.0
HPHS	100.0	100.0	99.1	—	—	100.0	100.0	100.0
ISA	100.0	100.0	100.0	92.9	61.4	28.1	43.1	85.7
Life Academy	100.0	98.4	98.4	92.3	61.5	96.7	98.4	98.4
MPTA	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
OSA	100.0	100.0	100.0	96.4	98.2	95.5	92.2	97.7
PLTW-Barstow	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
PLTW-Lancaster	100.0	100.0	100.0	100.0	28.6	100.0	100.0	100.0
STaRS	94.9	100.0	95.7	100.0	22.2	64.1	92.9	73.9

Note: Continuation rates for BuildSF not included, as the BuildSF program in 2007-08 was not designed to continue from year to year for individual students.

Table D7: Post-secondary plans of seniors within the ConnectEd Network sites, 2007–08

	4-yr only %	4-yr + + empl. %	2-yr only %	2-yr+ + empl %	tech/ appr. %	empl only %	milit- ary %	other %
Total	36.2	1.9	34.6	14.7	2.9	3.5	4.8	1.3
School								
BITA	—	—	—	—	—	—	—	—
BuildSF	22.2	0.0	0.0	77.8	0.0	0.0	0.0	0.0
CART	—	—	—	—	—	—	—	—
CTA	30.4	1.3	35.4	8.9	5.1	2.5	11.4	5.1
DMD	32.5	0.0	65.0	0.0	0.0	1.3	1.3	0.0
ESGVROP	—	—	—	—	—	—	—	—
HCA-Placerville								
HCA-Palmdale	—	—	—	—	—	—	—	—
HPHS	—	—	—	—	—	—	—	—
ISA	0.0	0.0	68.2	0.0	4.5	15.9	11.4	0.0
Life Academy	67.3	0.0	17.3	11.5	1.9	1.9	0.0	0.0
MPTA	19.2	11.5	0.0	61.5	3.8	0.0	3.8	0.0
OSA	79.6	0.0	16.3	0.0	2.0	2.0	0.0	0.0
PLTW-Barstow	—	—	—	—	—	—	—	—
PLTW-Lancaster	7.7	23.1	15.4	53.8	0.0	0.0	0.0	0.0
STaRS	5.6	0.0	0.0	66.7	11.1	5.6	11.1	0.0

Table D8a: CAHSEE pass rates of 2007-08 10th-grade students within the ConnectEd Network sites, by site, 2007–08

	English/Language Arts				Mathematics			
	Pass		No Pass		Pass		No Pass	
	%	#	%	#	%	#	%	#
Total	82.9	754	17.1	155	79.5	724	20.5	187
School								
BITA	73.9	34	26.1	12	73.3	33	26.7	12
CTA	77.4	106	22.6	31	82.4	112	17.6	24
DMD	83.6	97	16.4	19	74.1	86	25.9	30
HCA-Placerville	88.9	56	11.1	7	92.1	58	7.9	5
HCA-Palmdale	88.0	147	12	20	82.7	139	17.3	29
HPHS	82.9	92	17.1	19	76.6	85	23.4	26
ISA	64.4	38	35.6	21	66.7	40	33.3	20
Life Academy	71.9	46	28.1	18	70.3	45	29.7	19
MPTA	92.9	39	7.1	3	92.9	39	7.1	3
OSA	97.9	47	2.1	1	70.0	35	30.0	15
PLTW-Barstow	81.8	9	18.2	2	81.8	9	18.2	2
PLTW-Lancaster	94.1	16	5.9	1	88.2	15	11.8	2
STaRS	96.4	27	3.6	1	100.0	28	0.0	0

Table D8b: CAHSEE pass rates of 2007-08 10th-grade students within the ConnectEd Network sites, by student race/ethnicity

	English/Language Arts				Mathematics			
	Pass		No Pass		Pass		No Pass	
	%	#	%	#	%	#	%	#
Total	83.2	747	16.8	151	79.6	716	20.4	184
Student race/ethnicity								
Hispanic/Latino	78.6	349	21.4	95	75.8	335	24.2	107
White	93.4	185	6.6	13	91.0	183	9.0	18
African-American	77.6	118	22.4	34	68.4	104	31.6	48
Asian	92.2	59	7.8	5	92.2	59	7.8	5
All other	90.0	36	10.0	4	85.4	35	14.6	6

Note: Totals slightly different from those shown in Table 7a because of missing data on the race/ethnicity variable.

Table D8c: CAHSEE pass rates of 2007-08 10th-grade students within the ConnectEd Network sites, by site and student race/ethnicity

	English/Language Arts				Mathematics			
	Pass		No Pass		Pass		No Pass	
	%	#	%	#	%	#	%	#
Total	83.2	747	16.8	151	79.6	716	20.4	184
BITA								
Hispanic/Latino	67.6	23	32.4	11	69.7	23	30.3	10
White	90.0	9	10.0	1	80.0	8	20.0	2
African-American	—	—	—	—	—	—	—	—
Asian	—	—	—	—	—	—	—	—
Other	100.0	2	0.0	0	100.0	2	0.0	0
CTA								
Hispanic/Latino	71.1	59	28.9	24	75.6	62	24.4	20
White	85.7	18	14.3	3	95.2	20	4.8	1
African-American	81.3	13	18.8	3	86.7	13	13.3	2
Asian	92.9	13	7.1	1	92.9	13	7.1	1
Other	100.0	3	0.0	0	100.0	4	0.0	0
DMD								
Hispanic/Latino	81.4	35	18.6	8	67.4	29	32.6	14
White	96.3	26	3.7	1	88.9	24	11.1	3
African-American	68.4	13	31.6	6	52.6	10	47.4	9
Asian	87.5	14	12.5	2	93.8	15	6.3	1
Other	81.8	9	18.2	2	72.7	8	27.3	3
HCA-Placerville								
Hispanic/Latino	83.3	5	16.7	1	100.0	6	0.0	0
White	93.9	46	6.1	3	91.8	45	8.2	4
African-American	75.0	3	25.0	1	100.0	4	0.0	0
Asian	—	—	—	—	—	—	—	—
Other	100.0	2	0.0	0	100.0	2	0.0	0
HCA-Palmdale								
Hispanic/Latino	86.7	111	13.3	17	80.5	103	19.5	25
White	93.8	15	6.3	1	88.2	15	11.8	2
African-American	87.5	14	12.5	2	87.5	14	12.5	2
Asian	100.0	6	0.0	0	100.0	6	0.0	0
Other	100.0	1	0.0	0	100.0	1	0.0	0

Table D8c: CAHSEE pass rates of 2007-08 10th-grade students within the ConnectEd Network sites, by site and student race/ethnicity, continued

	English/Language Arts				Mathematics			
	Pass		No Pass		Pass		No Pass	
	%	#	%	#	%	#	%	#
HPHS								
Hispanic/Latino	83.8	31	16.2	6	75.7	28	24.3	9
White	100.0	18	0.0	0	88.9	16	11.1	2
African-American	66.7	26	33.3	13	64.1	25	35.9	14
Asian	100.0	12	0.0	0	91.7	11	8.3	1
Other	100.0	5	0.0	0	100.0	5	0.0	0
ISA								
Hispanic/Latino	56.3	18	43.8	14	62.5	20	37.5	12
White	90.0	9	10.0	1	90.9	10	9.1	1
African-American	62.5	10	37.5	6	56.3	9	43.8	7
Asian	—	—	—	—	—	—	—	—
Other	100.0	1	0.0	0	100.0	1	0.0	0
Life Academy								
Hispanic/Latino	75.6	34	24.4	11	71.1	32	28.9	13
White	0.0	0	100.0	1	0.0	0	100.0	1
African-American	75.0	3	25.0	1	100.0	4	0.0	0
Asian	75.0	6	25.0	2	75.0	6	25.0	2
Other	50.0	1	50.0	1	50.0	1	50.0	1
MPTA								
Hispanic/Latino	88.9	8	11.1	1	88.9	8	11.1	1
White	100.0	15	0.0	0	93.3	14	6.7	1
African-American	83.3	5	16.7	1	83.3	5	16.7	1
Asian	100.0	6	0.0	0	100.0	6	0.0	0
Other	83.3	5	16.7	1	100.0	6	0.0	0
OSA								
Hispanic/Latino	100.0	7	0.0	0	100.0	7	0.0	0
White	100.0	1	0.0	0	100.0	2	0.0	0
African-American	96.7	29	3.3	1	58.1	18	41.9	13
Asian	—	—	—	—	—	—	—	—
Other	100.0	5	0.0	0	60.0	3	40.0	2

Table D8c: CAHSEE pass rates of 2007-08 10th-grade students within the ConnectEd Network sites, by site and student race/ethnicity, continued

	English/Language Arts				Mathematics			
	Pass		No Pass		Pass		No Pass	
	%	#	%	#	%	#	%	#
PLTW-Barstow								
Hispanic/Latino	80.0	4	20.0	1	60.0	3	40.0	2
White	83.3	5	16.7	1	100.0	6	0.0	0
African-American	—	—	—	—	—	—	—	—
Asian	—	—	—	—	—	—	—	—
Other	—	—	—	—	—	—	—	—
PLTW-Lancaster								
Hispanic/Latino	100.0	5	0.0	0	80.0	4	20.0	1
White	90.0	9	10.0	1	90.0	9	10.0	1
African-American	—	—	—	—	—	—	—	—
Asian	100.0	1	0.0	0	100.0	1	0.0	0
Other	100.0	1	0.0	0	100.0	1	0.0	0
STaRS								
Hispanic/Latino	90.0	9	10.0	1	100.0	10	0.0	0
White	100.0	14	0.0	0	100.0	14	0.0	0
African-American	100.0	2	0.0	0	100.0	2	0.0	0
Asian	100.0	1	0.0	0	100.0	1	0.0	0
Other	100.0	1	0.0	0	100.0	1	0.0	0

Note: Totals slightly different from those shown in Table D8a because of missing data on the race/ethnicity variable.

Table D9: Proficiency level distribution of students within ConnectEd Network sites and the state of California, by CST exams taken in 2007-08

CST exam	Far below & below basic %	Basic %	Proficient & advanced %	Number of students
		Network Sites		
English/Language Arts				
English 9	21.0	34.8	44.2	802
English 10	25.7	32.7	41.6	883
English 11	26.2	33.4	40.3	1297
Mathematics				
General Math[1]	47.1	29.4	23.5	17
Algebra 1	58.1	31.6	10.4	775
Geometry	69.8	22.2	8.0	977
Algebra 2	61.2	23.5	15.4	742
Summative Math	54.6	22.7	22.7	326
Science				
Biology	21.9	40.1	38.0	1179
Chemistry	56.6	31.7	11.6	668
Physics	37.3	43.7	19.0	327
Earth Science	27.2	39.0	33.9	313
Life Science	26.8	37.9	35.3	676
Social Studies				
World History	41.1	32.6	26.4	921
US History	28.9	31.5	39.6	1272

Table D9: Proficiency level distribution of students within ConnectEd Network sites and the state of California, by CST exams taken in 2007-08, continued

	Far below & below basic %	Basic %	Proficient & advanced %
	California State		
CST exam			
English/Language Arts			
English 9	25.0	27.0	49.0
English 10	31.0	28.0	41.0
English 11	37.0	26.0	37.0
Mathematics			
Algebra 1[2]	60.0	26.0	14.0
Geometry[3]	54.0	25.0	21.0
Algebra 2	44.0	29.0	27.0
Summative Math	26.0	27.0	47.0
Science			
Biology	26.0	33.0	42.0
Chemistry	30.0	38.0	32.0
Physics	23.0	33.0	43.0
Earth Science	34.0	37.0	29.0
Life Science-10	33.0	27.0	40.0
Social Studies			
World History	41.0	26.0	33.0
US History	36.0	26.0	38.0

[1] Students taking the general math CST attend only 5 of the 16 sites.

[2] These percentages were calculated using only 9th- through 11th-graders who took the Algebra 1 exam.

[3] These percentages were calculated using only 9th- through 11th-graders who took the Geometry exam.

Table D10: Proficiency level distribution of students within ConnectEd Network sites, by selected CST exams taken in 2007-08 and race/ethnicity

	Far below & below basic %	Basic %	Proficient & advanced %	Number of students
English/Language Arts				
English 9				
Hispanic/Latino	25.0	41.7	33.3	367
White	12.5	30.0	57.5	160
African-American	27.6	27.6	44.7	152
Asian	12.0	29.3	58.7	75
Other	13.1	28.9	57.9	38
English 10				
Hispanic/Latino	30.0	35.7	34.2	423
White	16.5	31.8	51.8	201
African-American	27.6	31.7	40.7	145
Asian	22.2	25.4	52.4	63
Other	27.5	22.5	50.0	40
English 11				
Hispanic/Latino	31.8	33.5	34.6	465
White	18.9	29.3	51.8	508
African-American	32.1	39.7	28.3	131
Asian	30.2	43.2	26.6	139
Other	22.2	31.1	46.7	45
Mathematics				
Algebra 1				
Hispanic/Latino	59.1	29.9	11.0	391
White	47.8	39.9	12.5	153
African-American	70.6	25.5	3.9	153
Asian	50.0	34.2	15.8	38
Other	42.8	39.3	17.9	28
Geometry				
Hispanic/Latino	75.9	17.5	6.6	439
White	57.7	32.0	10.3	241
African-American	80.3	16.6	3.2	157
Asian	57.7	25.9	16.5	85
Other	66.0	27.7	6.4	47

Table D10: Proficiency level distribution of students within ConnectEd Network sites, by selected CST exams taken in 2007-08 and race/ethnicity, continued

	Far below & below basic %	Basic %	Proficient & advanced %	Number of students
Algebra 2				
Hispanic/Latino	65.7	21.7	12.6	254
White	54.2	25.9	19.9	282
African-American	72.9	17.6	9.5	74
Asian	62.5	22.1	15.4	104
Other	50.0	38.5	11.5	26
Summative Math				
Hispanic/Latino	72.5	18.3	9.2	109
White	34.7	26.4	38.8	121
African-American	80.7	16.1	3.2	31
Asian	55.9	20.9	23.3	43
Other	33.3	26.7	40.0	15
Science				
Earth Science				
Hispanic/Latino	38.8	39.6	21.7	134
White	17.7	29.4	52.9	85
African-American	31.7	43.9	24.4	41
Asian	9.1	45.5	45.5	33
Other	10.0	55.0	35.0	20
Life Science				
Hispanic/Latino	31.7	41.5	26.8	313
White	19.6	32.0	48.3	153
African-American	29.9	40.2	29.9	117
Asian	19.2	27.7	53.2	47
Other	14.3	42.9	42.8	35
Biology				
Hispanic/Latino	27.7	44.5	27.8	515
White	11.3	32.8	55.9	302
African-American	25.3	52.2	22.6	186
Asian	14.5	31.1	54.4	103
Other	26.5	18.9	54.7	53

Table D10: Proficiency level distribution of students within ConnectEd Network sites, by selected CST exams taken in 2007-08 and race/ethnicity, continued

	Far below & below basic %	Basic %	Proficient & advanced %	Number of students
Chemistry				
Hispanic/Latino	62.5	30.2	7.2	248
White	41.1	39.3	19.6	219
African-American	82.1	13.7	4.2	95
Asian	55.3	31.6	13.2	76
Other	39.1	47.8	13.0	23
Physics				
Hispanic/Latino	47.9	42.3	9.7	123
White	30.7	35.6	33.7	101
African-American	44.9	46.9	8.1	49
Asian	15.0	65.0	20.0	40
Other	30.8	46.2	23.1	13
Social Studies				
World History				
Hispanic/Latino	48.1	33.1	18.7	432
White	31.4	28.6	39.9	213
African-American	41.1	36.4	22.5	151
Asian	28.2	33.8	38.1	71
Other	37.3	34.9	27.9	43
US History				
Hispanic/Latino	36.4	32.7	31.0	456
White	20.4	25.8	53.8	496
African-American	49.2	32.8	18.0	128
Asian	21.3	44.7	34.1	141
Other	14.2	38.1	47.6	42

Table D11: Proficiency level distribution of students within ConnectEd Network sites and in California on selected CST exams taken in 2007-08, by grade level

	Far below & below basic %	Basic %	Proficient & advanced %	Number of students
		Network Sites		
English/Language Arts				
English 9	21.0	34.8	44.2	1802
English 10	25.7	32.7	41.6	883
English 11	26.2	33.4	40.3	1297
Mathematics				
Algebra 1 - grade 9	53.4	34.4	12.2	511
Algebra 1 - grade 10	66.3	26.3	7.4	190
Algebra 1 - grade 11	68.9	25.7	5.4	74
Geometry - grade 9	61.5	25.1	13.4	239
Geometry - grade 10	69.5	23.2	7.3	512
Geometry - grade 11	79.2	16.8	4.0	226
Algebra 2 - grade 10	51.3	27.6	21.0	152
Algebra 2 - grade 11	65.0	21.6	13.3	578
Summative Math - grade 11	55.4	23.0	21.7	318
Science				
Biology - grade 9	27.6	43.6	28.8	369
Biology - grade 10	20.3	37.3	42.4	509
Biology - grade 11	17.6	40.5	41.9	301
Chemistry - grade 10	62.6	26.0	11.5	131
Chemistry - grade 11	55.5	33.1	11.5	532
Physics - grade 9	48.5	46.1	5.5	128
Physics - grade 11	29.2	42.7	28.2	192
Earth Science - grade 9	20.8	38.2	41.1	241
Life Science - grade 10	26.6	38.0	35.5	674
Social Studies				
World History (10)	41.1	32.9	26.0	854
US History (11)	28.7	31.6	39.7	1268

Table D11: Proficiency level distribution of students within ConnectEd Network sites and in California on selected CST exams taken in 2007-08, by grade level, continued

	Far below & below basic %	Basic %	Proficient & advanced %
		California State	
English/Language Arts			
English 9	25.0	27.0	49.0
English 10	31.0	28.0	41.0
English 11	37.0	26.0	37.0
Mathematics			
Algebra 1 - grade 9	53.0	28.0	18.0
Algebra 1 - grade 10	67.0	24.0	9.0
Algebra 1 - grade 11	74.0	20.0	5.0
Geometry - grade 9	28.0	29.0	43.0
Geometry - grade 10	62.0	25.0	12.0
Geometry - grade 11	77.0	18.0	6.0
Algebra 2 - grade 10	32.0	32.0	36.0
Algebra 2 - grade 11	61.0	28.0	11.0
Summative Math - grade 11	29.0	28.0	43.0
Science			
Biology - grade 9	18.0	29.0	52.0
Biology - grade 10	28.0	36.0	35.0
Biology - grade 11	29.0	31.0	39.0
Chemistry - grade 10	21.0	38.0	41.0
Chemistry - grade 11	37.0	38.0	25.0
Physics - grade 9	33.0	37.0	30.0
Physics - grade 11	21.0	32.0	47.0
Earth Science - grade 9	31.0	38.0	31.0
Life Science - grade 10	33.0	27.0	40.0
Social Studies			
World History (10)	39.0	27.0	33.0
US History (11)	36.0	26.0	38.0

Note: Students within Network sites taking the Algebra 2 CST in grade 9 totaled only 12 students and those taking the Summative Math CST in grade 10 totaled only 8 students; neither results are reproduced here. Similarly, very few students took the Earth Science CST in grades 10 and 11 (35 and 37, respectively), the Life Science CST in grade 9 (2), the Chemistry CST in grade 9 (5) or the Physics CST in grade 10 (7); those results are also excluded.

Table D12: Proficiency level distribution of students within ConnectEd Network sites and the state of California on selected CST mathematics exams taken in 2007-08, by grade level and race/ethnicity

	Far below & below basic %	Basic %	Proficient & advanced %	Number of students
		Network sites		
Algebra 1 - grade 9				
Hispanic/Latino	52.6	34.5	12.8	249
White	46.3	39.2	14.4	97
African-American	66.1	28.6	5.4	112
Asian	48.3	34.5	17.2	29
Algebra 1 - grade 10				
Hispanic/Latino	70.1	21.5	8.4	107
White	55.3	36.8	7.9	38
African-American	75.0	25.0	0.0	28
Asian	50.0	37.5	12.5	8
Algebra 1 - grade 11				
Hispanic/Latino	71.4	22.9	5.7	35
White	38.9	50.0	11.1	18
African-American	100.0	0.0	0.0	13
Asian	100.0	0.0	0.0	1
Geometry - grade 9				
Hispanic/Latino	76.9	13.7	9.5	95
White	43.2	37.3	19.6	51
African-American	84.9	12.1	3.0	33
Asian	41.0	38.5	20.5	39
Geometry - grade 10				
Hispanic/Latino	72.7	20.2	7.2	263
White	55.8	35.8	8.5	95
African-American	74.8	22.2	3.0	99
Asian	65.5	13.8	20.6	29
Geometry - grade 11				
Hispanic/Latino	85.2	13.6	1.2	81
White	67.3	25.3	7.4	95
African-American	96.0	0.0	4.0	25
Asian	82.4	17.6	0.0	17

Table D12: Proficiency level distribution of students within ConnectEd Network sites and the state of California on selected CST mathematics exams taken in 2007-08, by grade level and race/ethnicity, continued

	Far below & below basic %	Basic %	Proficient & advanced %	Number of students
		Network sites		
Algebra 2 - grade 10				
Hispanic/Latino	62.2	26.7	11.1	45
White	45.0	25.0	30.0	60
African-American	23.1	46.2	30.8	13
Asian	66.7	14.3	19.0	21
Algebra 2 - grade 11				
Hispanic/Latino	66.5	20.6	12.9	209
White	58.1	24.9	17.1	217
African-American	85.0	11.7	3.3	60
Asian	66.3	22.1	11.7	77
Summative Math - grade 11				
Hispanic/Latino	72.5	18.3	9.2	109
White	34.5	26.9	38.6	119
African-American	82.8	17.2	0.0	29
Asian	60.0	20.0	20.0	40
		California State		
Algebra 1 - grade 9				
Hispanic/Latino	63.0	26.0	12.0	
White	37.0	35.0	28.0	
African-American	67.0	23.0	10.0	
Asian	30.0	32.0	39.0	
Algebra 1 - grade 10				
Hispanic/Latino	72.0	22.0	6.0	
White	58.0	30.0	12.0	
African-American	78.0	18.0	4.0	
Asian	50.0	30.0	19.0	
Algebra 1 - grade 11				
Hispanic/Latino	77.0	18.0	4.0	
White	68.0	24.0	8.0	
African-American	83.0	14.0	3.0	
Asian	61.0	25.0	13.0	

Table D12: Proficiency level distribution of students within ConnectEd Network sites and the state of California on selected CST mathematics exams taken in 2007-08, by grade level and race/ethnicity, continued

	Far below & below basic %	Basic %	Proficient & advanced %	Number of students
		California State		
Geometry - grade 9				
Hispanic/Latino	45.0	31.0	24.0	
White	16.0	30.0	55.0	
African-American	52.0	28.0	20.0	
Asian	14.0	23.0	64.0	
Geometry - grade 10				
Hispanic/Latino	74.0	20.0	7.0	
White	46.0	34.0	20.0	
African-American	79.0	17.0	5.0	
Asian	43.0	29.0	28.0	
Geometry - grade 11				
Hispanic/Latino	82.0	15.0	3.0	
White	65.0	25.0	9.0	
African-American	86.0	11.0	3.0	
Asian	66.0	23.0	11.0	
Algebra 2 - grade 10				
Hispanic/Latino	47.0	31.0	22.0	
White	24.0	34.0	42.0	
African-American	54.0	28.0	18.0	
Asian	16.0	28.0	56.0	
Algebra 2 - grade 11				
Hispanic/Latino	71.0	23.0	8.0	
White	52.0	33.0	14.0	
African-American	76.0	19.0	5.0	
Asian	42.0	34.0	23.0	
Summative Math - grade 11				
Hispanic/Latino	48.0	29.0	22.0	
White	23.0	30.0	47.0	
African-American	55.0	27.0	18.0	
Asian	14.0	22.0	63.0	

Table D13: Proficiency level distribution of students within ConnectEd Network sites and the state of California on selected CST science exams taken in 2007-08, by grade level and race/ethnicity

	Far below & below basic %	Basic %	Proficient & advanced %	Number of students
		Network sites		
Biology - grade 9				
Hispanic/Latino	33.3	44.8	21.8	183
White	9.3	29.6	61.1	54
African-American	27.6	58.6	13.8	87
Asian	17.3	30.4	52.2	23
Biology - grade 10				
Hispanic/Latino	26.2	43.5	30.4	214
White	12.2	32.6	55.3	132
African-American	24.1	43.0	32.9	79
Asian	9.3	23.3	67.5	43
Biology - grade 11				
Hispanic/Latino	22.0	45.8	32.2	118
White	11.2	34.5	54.3	116
African-American	20.0	60.0	20.0	20
Asian	18.9	40.5	40.5	37
Chemistry - grade 10				
Hispanic/Latino	75.0	18.2	6.8	44
White	36.1	44.4	19.5	36
African-American	87.5	6.3	6.3	32
Asian	38.5	46.2	15.4	13
Chemistry - grade 11				
Hispanic/Latino	59.8	32.8	7.4	204
White	42.8	37.8	19.5	180
African-American	80.3	18.0	1.6	61
Asian	58.7	28.6	12.7	63
Physics - grade 9				
Hispanic/Latino	57.2	41.4	1.4	70
White	50.0	33.3	16.7	18
African-American	60.0	40.0	0.0	15
Asian	16.7	72.2	11.1	18

Table D13: Proficiency level distribution of students within ConnectEd Network sites and the state of California on selected CST science exams taken in 2007-08, by grade level and race/ethnicity, continued

	Far below & below basic %	Basic %	Proficient & advanced %	Number of students
		Network sites		
Physics - grade 11				
Hispanic/Latino	34.0	44.0	22.0	50
White	25.4	36.7	38.0	79
African-American	38.2	50.0	11.7	34
Asian	13.6	59.1	27.2	22
Earth Science - grade 9				
Hispanic/Latino	29.5	40.0	30.6	85
White	15.8	30.3	53.9	76
African-American	25.1	43.8	31.3	32
Asian	9.7	41.9	48.4	31
Life Science - grade 10				
Hispanic/Latino	31.4	41.7	27.0	312
White	19.6	32.0	48.3	153
African-American	29.3	40.5	30.2	116
Asian	19.2	27.7	53.2	47
		California State		
Biology - grade 9				
Hispanic/Latino	30.0	37.0	33.0	
White	8.0	22.0	70.0	
African-American	32.0	37.0	31.0	
Asian	5.0	17.0	78.0	
Biology - grade 10				
Hispanic/Latino	38.0	40.0	23.0	
White	17.0	31.0	52.0	
African-American	40.0	39.0	22.0	
Asian	15.0	32.0	53.0	
Biology - grade 11				
Hispanic/Latino	39.0	36.0	24.0	
White	18.0	27.0	55.0	
African-American	44.0	34.0	21.0	
Asian	14.0	21.0	65.0	

Table D13: Proficiency level distribution of students within ConnectEd Network sites and the state of California on selected CST science exams taken in 2007-08, by grade level and race/ethnicity, continued

	Far below & below basic %	Basic %	Proficient & advanced %
	California State		
Chemistry - grade 10			
Hispanic/Latino	37.0	42.0	20.0
White	11.0	37.0	53.0
African-American	43.0	39.0	18.0
Asian	9.0	31.0	60.0
Chemistry - grade 11			
Hispanic/Latino	51.0	37.0	12.0
White	22.0	42.0	36.0
African-American	56.0	33.0	10.0
Asian	23.0	35.0	43.0
Physics - grade 9			
Hispanic/Latino	46.0	37.0	16.0
White	19.0	38.0	42.0
African-American	56.0	34.0	10.0
Asian	14.0	33.0	52.0
Physics - grade 11			
Hispanic/Latino	35.0	40.0	25.0
White	11.0	27.0	61.0
African-American	42.0	38.0	21.0
Asian	9.0	27.0	64.0
Earth Science - grade 9			
Hispanic/Latino	39.0	41.0	20.0
White	18.0	34.0	48.0
African-American	45.0	38.0	16.0
Asian	20.0	38.0	43.0
Life Science - grade 10			
Hispanic/Latino	44.0	31.0	25.0
White	21.0	23.0	56.0
African-American	49.0	28.0	23.0
Asian	16.0	21.0	64.0

Table D14: Proficiency level distribution of students within ConnectEd Network sites and the state of California on selected CST history exams taken in 2007-08, by grade level and race/ethnicity

	Far below & below basic %	Basic %	Proficient & advanced %	Number of students
		Network sites		
World History (10)				
Hispanic/Latino	48.7	32.6	18.8	411
White	32.0	29.9	38.2	194
African-American	39.6	37.4	23.0	139
Asian	24.6	34.4	41.0	61
Other	36.9	36.8	26.3	38
U.S. History (11)				
Hispanic/Latino	36.2	32.7	31.0	455
White	20.4	25.9	53.8	495
African-American	48.4	33.3	18.3	126
Asian	21.3	44.7	34.1	141
Other	14.2	38.1	47.6	42
		California State		
World History (10)				
Hispanic/Latino	52.0	27.0	21.0	
White	25.0	27.0	49.0	
African-American	55.0	26.0	19.0	
Asian	19.0	25.0	55.0	
U.S. History (11)				
Hispanic/Latino	47.0	28.0	25.0	
White	24.0	24.0	51.0	
African-American	52.0	26.0	21.0	
Asian	19.0	23.0	58.0	

Table D15: Proficiency level distribution of students within ConnectEd Network sites and the state of California on selected CST English exams taken in 2007-08, by grade level and race/ethnicity

	Far below & below basic %	Basic %	Proficient & advanced %	Number of students
		Network sites		
English 9				
Hispanic/Latino	25.0	41.7	33.3	367
White	12.5	30.0	57.5	160
African-American	27.6	27.6	44.7	152
Asian	12.0	29.3	58.7	75
Other	13.1	28.9	57.9	38
English 10				
Hispanic/Latino	30.0	35.7	34.2	423
White	16.5	31.8	51.8	201
African-American	27.6	31.7	40.7	145
Asian	22.2	25.4	52.4	63
Other	27.5	22.5	50.0	40
English 11				
Hispanic/Latino	31.8	33.5	34.6	465
White	18.9	29.3	51.8	508
African-American	32.1	39.7	28.3	131
Asian	30.2	43.2	26.6	139
Other	22.2	31.1	46.7	45
		California State		
English 9				
Hispanic/Latino	34.0	33.0	34.0	
White	12.0	20.0	68.0	
African-American	34.0	31.0	34.0	
Asian	10.0	17.0	73.0	
English 10				
Hispanic/Latino	41.0	33.0	27.0	
White	18.0	24.0	57.0	
African-American	44.0	30.0	26.0	
Asian	15.0	21.0	64.0	
English 11				
Hispanic/Latino	48.0	29.0	22.0	
White	24.0	23.0	53.0	
African-American	51.0	26.0	22.0	
Asian	20.0	22.0	58.0	

Appendix E: Achievement Data Tables for Individual Site Comparisons

For 15 of the 16 network sites, we compared overall gender and ethnic composition of program students to the school or district (or both) within which the program operates, as an indication of the similarity of the program to the surrounding school or district. We also compared attendance, promotion, graduation, a–g fulfillment, and continuation rates, as well as students' aspirations for each site to the network as a whole. Whole school, district, and statewide estimates are not available for 2007–08 for those factors.

Finally, as with the general assessment of students in the network (whose outcomes were compared to those of students statewide), results of students at each site were compared to those of students in the surrounding school and/or district. Note that these comparisons are to the school (or district) as a whole, not to "the rest" of the school. In other words, program students' results are part of the schools' (or districts') results. We did not make distinctions based on race/ethnicity or grade level.

East San Gabriel Valley Regional Occupational Program (ROP) is not included in these series of tables for two reasons. Because it attracts and enrolls students from seven different school districts, comparisons could not be made to any one "setting." In addition, East San Gabriel Valley ROP supplied data only for their seniors involved in work-based learning experiences. Being seniors, these students did not take the CSTs nor a 10th-grade CAHSEE in 2007–08.

For schools that have been in the network for both 2006–07 and 2007–08, we also compared results over time as an indication of the progress of the program as a whole. Of course, the students taking each exam each year are different students, so this assessment should be viewed as an indication of the program and its possible effect on succeeding classes of students. Any differences in the two student classes are *not* accounted for.

Appendix tables for Building Industry Technology Academy (BITA), located at Katella High School (Katella HS) within Anaheim Union High School District (Anaheim UHSD)

Table 1: Gender and racial/ethnic distribution of secondary students, 2007-08

	Male		Female		Hispanic		White		African-American		Asian		All Other	
	%	#	%	#	%	#	%	#	%	#	%	#	%	#
Student group														
BITA	83.9	130	16.1	25	76.8	119	17.4	27	0.6	1	1.9	3	3.2	5
Katella HS	49.6	1,245	50.4	1,266	79.3	1,990	11.5	288	1.4	36	3.6	90	4.2	107
Anaheim UHSD	50.8	10,956	49.2	10,610	57.5	19,163	16.1	5,382	2.7	899	10.8	3,596	12.9	4,303
Network Sites	50.7	2,789	49.3	2,711	42.7	2,336	29.2	1,595	11.8	645	11.7	638	4.6	251
State	51.3		48.7		45.3		31.4		8.0		8.6		6.6	

Table 2: Attendance, promotion, and continuation rates of students, 2007-08

	Attendance Rates				Promotion from one grade to the next			12th grade graduation	Graduation having met a-g	Yearly continuation in program		
	9th	10th	11th	12th	9th	10th	11th			9th	10th	11th
	%	%	%	%	%	%	%	%	%	%	%	%
Student group												
BITA	92.0	91.3	91.1	90.8	72.7	68.1	54.5	85.7	4.8	—	—	—
Katella HS								85.1	26.1			
Anaheim UHSD								76.7	33.2			
Network Sites	95.1	94.7	94.3	93.6	96.0	90.4	97.7	98.3	34.9	91.7	81.3	72.8
State								80.5	35.5			

Note: Comparison data for attendance and promotion rates are not publicly available. The school, district, and state graduation rates and graduation rates having met a-g requirements are from the 2006-07 school year. Rates for 2007-08 were not available as of January 15, 2009.

Table 3: Seniors' plans for activity after graduation, 2007-08

	4-yr only %	4-yr + empl. %	2-yr only %	2-yr + empl. %	tech/ appr. %	empl. only %	mili-tary %	other %	#
Student group									
BITA	—	—	—	—	—	—	—	—	0
Network Sites	36.2	1.9	34.6	14.7	2.9	3.5	4.8	1.3	373

Table 4: Percentage of 2007-08 10th-grade students passing the CAHSEE

	English Language Arts		Mathematics	
	%	(n)	%	(n)
Student group				
BITA	73.9	46	73.3	45
Katella HS	77	620	78	621
Anaheim UHSD	80	5,441	81	5,451
Network Sites	82.9	754	79.5	724
State	79		78	
BITA students, by race/ethnicity				
Hispanic	67.6	34	69.7	33
White	90.0	10	80.0	10
African-American	—	—	—	—
Asian	—	—	—	—
All Other	100.0	2	100.0	2

Table 5: Percentage of students scoring at or above proficiency on selected English CST exams, 2007-08

	English 9		English 10		English 11	
	%	(n)	%	(n)	%	(n)
Student group						
BITA	23.8	21	23.3	43	14.6	41
Katella HS	40	709	28	597	28	508
Anaheim UHSD	50	5,487	42	5,340	38	4,884
Network Sites	44.2	802	41.6	883	40.3	1,297
State	49		41		37	

Table 6: Percentage of students scoring at or above proficiency on selected mathematics CST exams, 2007-08

	Algebra 1		Geometry		Algebra 2		Summative Mathematics	
	%	(n)	%	(n)	%	(n)	%	(n)
Student group								
BITA	5.2	77	15.8	19	25.0	4	—	—
Katella HS	8	1,075	22	439	31	201	45	51
Anaheim UHSD	14	7,458	29	3,875	35	2,232	56	755
Network Sites	10.4	775	8.0	977	15.4	742	22.7	326
State	14		21		27		47	

Note: State and district rates calculated from publicly available data including only those students in grades 9 through 11.

Table 7: Percentage of students scoring at or above proficiency on selected science CST exams, 2007-08

	Biology		Chemistry		Physics		Earth Science		Life Science (10)	
	%	(n)	%	(n)	%	(n)	%	(n)	%	(n)
Student group										
BITA	46.2	26	57.1	7	—	0	3.8	52	20.4	44
Katella HS	39	617	33	279	28	87	10	610	30	602
Anaheim UHSD	50	5,730	37	2,771	56	737	22	2,904	42	5,266
Network Sites	38	1,179	11.6	668	19.0	327	33.9	313	35.3	676
State	42		32		43		29		40	

Table 8: Percentage of students scoring at or above proficiency on selected history CST exams, 2007-08

	World History		U.S. History	
	%	(n)	%	(n)
Student group				
BITA	26.1	46	15.0	40
Katella HS	29	610	27	511
Anaheim UHSD	38	5,215	43	4,806
Network Sites	26.4	921	39.6	1,272
State	33		38	

Appendix tables for Build San Francisco (BuildSF), operating as an autonomous site within San Francisco Unified School District (SFUSD)

Table 1: Gender and racial/ethnic distribution of secondary students, 2007-08

	Male		Female		Hispanic		White		African-American		Asian		All Other	
	%	#	%	#	%	#	%	#	%	#	%	#	%	#
Student group														
BuildSF	68.4	13	31.6	6	42.1	8	10.5	2	5.3	1	10.5	2	31.6	6
SFUSD	51.6	9,810	48.4	9,214	18.5	3,999	8.2	1,760	10.8	2,326	41.3	8,898	9.5	2,041
Network Sites	50.7	2,789	49.3	2,711	42.7	2336	29.2	1,595	11.8	645	11.7	638	4.6	251
State	51.3		48.7		45.3		31.4		8.0		8.6		6.6	

Table 2: Attendance, promotion, and continuation rates of students, 2007-08

	Attendance Rates				Promotion from one grade to the next			12th grade graduation	Graduation having met a-g	Yearly continuation in program		
	9th	10th	11th	12th	9th	10th	11th			9th	10th	11th
	%	%	%	%	%	%	%	%	%	%	%	%
Student group												
BuildSF	94.7	—	86.4	88.6	80.0	—	100.0	100.0	30.0	—	—	—
SFUSD								99.3	49.1			
Network Sites	95.1	94.7	94.3	93.6	96.0	90.4	97.7	98.3	34.9	91.7	81.3	72.8
State								80.5	35.5			

Note: Comparison data for attendance and promotion rates are not publicly available. The school, district, and state graduation rates and graduation rates having met a-g requirements are from the 2006-07 school year. Rates for 2007-08 were not available as of January 15, 2009.

Table 3: Seniors' plans for activity after graduation, 2007-08

	4-yr only %	4-yr + empl. %	2-yr only %	2-yr + empl. %	tech/ appr. %	empl. only %	mili-tary %	other %	#
Student group									
BuildSF	22.2	0.0	0.0	77.8	0.0	0.0	0.0	0.0	9
Network Sites	36.2	1.9	34.6	14.7	2.9	3.5	4.8	1.3	373

Table 4: Percentage of 2007-08 10th-grade students passing the CAHSEE

	English Language Arts		Mathematics	
	%	(n)	%	(n)
Student group				
BuildSF	—	—	—	—
SFUSD	77	4,644	80	3,677
Network Sites	82.9	754	79.5	724
State	79		78	

Table 5: Percentage of students scoring at or above proficiency on selected English CST exams, 2007-08

	English 9		English 10		English 11	
	%	(n)	%	(n)	%	(n)
Student group						
BuildSF	75.0	4	—	—	0.0	4
SFUSD	54	4,404	48	4,703	44	4,115
Network Sites	44.2	802	41.6	883	40.3	1,297
State	49		41		37	

Table 6: Percentage of students scoring at or above proficiency on selected mathematics CST exams, 2007-08

	Algebra 1		Geometry		Algebra 2		Summative Mathematics	
	%	(n)	%	(n)	%	(n)	%	(n)
Student group								
BuildSF	25.0	4	0.0	4	—	—	—	—
SFUSD	24	4,233	36	3,419	44	2,766	60	1,104
Network Sites	10.4	775	8	977	15.4	742	22.7	326
State	14		21		27		47	

Note: State and district rates calculated from publicly available data including only those students in grades 9 through 11.

Table 7: Percentage of students scoring at or above proficiency on selected science CST exams, 2007-08

	Biology		Chemistry		Physics		Earth Science		Life Science (10)	
	%	(n)	%	(n)	%	(n)	%	(n)	%	(n)
Student group										
BuildSF	—	0	—	0	—	0	—	0	—	0
SFUSD	48	4,934	42	2,887	43	1,401	26	2,149	47	2,710
Network Sites	38	1,179	11.6	668	19	327	33.9	313	35.3	676
State	42		32		43		29		40	

Table 8: Percentage of students scoring at or above proficiency on selected history CST exams, 2007-08

	World History		U.S. History	
	%	(n)	%	(n)
Student group				
BuildSF	—	—	—	—
SFUSD	37	4,804	42	3,956
Network Sites	26.4	921	39.6	1,272
State	33		38	

Appendix tables for CART, operating on an autonomous campus, drawing students from both Clovis Unified School District (Clovis USD) and Fresno Unified School District (Fresno USD)

Table 1: Gender and racial/ethnic distribution of secondary students, 2007-08

	Male		Female		Hispanic		White		African-American		Asian		All Other	
	%	#	%	#	%	#	%	#	%	#	%	#	%	#
Student group														
CART	49.2	588	50.8	607	27.4	327	54.0	645	3.4	41	13.8	165	1.4	17
CART/Clovis	52.0	354	48.0	327	19.1	130	65.2	444	1.6	11	12.3	84	1.8	12
CART/Fresno	45.5	234	54.5	280	38.3	197	39.1	201	5.8	30	15.8	81	1.0	5
Clovis USD	50.5	5,880	49.5	5,758	22.2	2,578	53.4	6,213	3.7	434	14.5	1,692	6.2	721
Fresno USD	49.6	11,574	50.4	11,778	52.4	12,223	17.3	4,037	10.8	2,516	17.6	4,099	2.0	457
Network Sites	50.7	2,789	49.3	2,711	42.7	2,336	29.2	1,595	11.8	645	11.7	638	4.6	251
State	51.3		48.7		45.3		31.4		8.0		8.6		6.6	

Table 2: Attendance, promotion, and continuation rates of students, 2007-08

	Attendance Rates				Promotion from one grade to the next			12th grade graduation	Graduation having met a-g	Yearly continuation in program		
	9th	10th	11th	12th	9th	10th	11th			9th	10th	11th
	%	%	%	%	%	%	%	%	%	%	%	%
Student group												
CART	—	—	—	91.4	—	—	100.0	96.8	43.9	—	—	56.7
Clovis USD								82.7	53.9			
Fresno USD								86.4	42.9			
Network Sites	95.1	94.7	94.3	93.6	96.0	90.4	97.7	98.3	34.9	91.7	81.3	72.8
State								80.5	35.5			

Note: Comparison data for attendance and promotion rates are not publicly available. The school, district, and state graduation rates and graduation rates having met a-g requirements are from the 2006-07 school year. Rates for 2007-08 were not available as of January 15, 2009.

Table 3: Seniors' plans for activity after graduation, 2007-08

	4-yr only %	4-yr + empl. %	2-yr only %	2-yr + empl. %	tech/ appr. %	empl. only %	mili-tary %	other %	#
Student group									
CART	—	—	—	—	—	—	—	—	0
Network Sites	36.2	1.9	34.6	14.7	2.9	3.5	4.8	1.3	373

Table 4: Percentage of 2007-08 10th-grade students passing the CAHSEE

	English Language Arts		Mathematics	
	%	(n)	%	(n)
Student group				
CART	—	—	—	—
CART/Clovis	89	2,829	91	2,839
CART/Fresno	68	5,092	71	5,063
Network Sites	82.9	754	79.5	724
State	79		78	

Table 5: Percentage of students scoring at or above proficiency on selected English CST exams, 2007-08

	English 9		English 10		English 11	
	%	(n)	%	(n)	%	(n)
Student group						
CART	—	—	—	—	43.6	629
CART/Clovis					49.9	357
CART/Fresno					35.3	272
Clovis USD	71	2,883	59	2,756	53	2,669
Fresno USD	34	5,478	27	5,010	23	4,848
Network Sites	44.2	802	41.6	883	40.3	1,297
State	49		41		37	

Table 6: Percentage of students scoring at or above proficiency on selected mathematics CST exams, 2007-08

	Algebra 1		Geometry		Algebra 2		Summative Mathematics	
	%	(n)	%	(n)	%	(n)	%	(n)
Student group								
CART	20.0	10	6.0	133	17.6	278	27.4	142
CART/Clovis	14.3	7	7.7	104	29.1	151	46.8	62
CART/Fresno	33.3	3	0.0	29	3.9	127	12.5	80
Clovis USD	40	2,578	32	2,530	56	1,526	61	865
Fresno USD	6	5,240	8	4,109	11	2,487	23	1,089
Network Sites	10.4	775	8	977	15.4	742	22.7	326
State	14		21		27		47	

Note: State and district rates calculated from publicly available data including only those students in grades 9 through 11.

Table 7: Percentage of students scoring at or above proficiency on selected science CST exams, 2007-08

	Biology		Chemistry		Physics		Earth Science		Life Science (10)	
	%	(n)	%	(n)	%	(n)	%	(n)	%	(n)
Student group										
CART	47.7	147	15.1	244	26.3	76	—	0	—	0
CART/Clovis	47.4	95	18.7	107	38.1	42				
CART/Fresno	48.1	52	12.4	137	11.8	34				
Clovis USD	62	3,267	51	1,502	67	264	47	1,420	57	3,267
Fresno USD	29	5,126	18	2,709	17	1,036	16	4,142	27	4,893
Network Sites	38	1,179	11.6	668	19	327	33.9	313	35.3	676
State	42		32		43		29		40	

Table 8: Percentage of students scoring at or above proficiency on selected history CST exams, 2007-08

	World History		U.S. History	
	%	(n)	%	(n)
Student group				
CART	20.0	15	48.2	622
CART/Clovis	33.3	6	51.7	346
CART/Fresno	11.1	9	43.8	276
Clovis USD	47	2,744	60	2,635
Fresno USD	25	5,097	27	4,715
Network Sites	26.4	921	39.6	1,272
State	33		38	

Appendix tables for Construction Technology Academy (CTA), an autonomous school operating within San Diego Unified School District (San Diego USD)

Table 1: Gender and racial/ethnic distribution of secondary students, 2007-08

	Male		Female		Hispanic		White		African-American		Asian		All Other	
	%	#	%	#	%	#	%	#	%	#	%	#	%	#
Student group														
CTA	77.0	345	23.0	103	53.8	241	17.4	78	13.6	61	10.5	47	4.7	21
San Diego USD	51.3	20818	48.5	19573	42.5	17,170	26.4	10,672	13.8	5,562	8.4	3,412	8.9	3,575
Network Sites	50.7	2,789	49.3	2,711	42.7	2,336	29.2	1,595	11.8	645	11.7	638	4.6	251
State	51.3		48.7		45.3		31.4		8.0		8.6		6.6	

Table 2: Attendance, promotion, and continuation rates of students, 2007-08

	Attendance Rates				Promotion from one grade to the next			12th grade graduation	Graduation having met a-g	Yearly continuation in program		
	9th	10th	11th	12th	9th	10th	11th			9th	10th	11th
	%	%	%	%	%	%	%	%	%	%	%	%
Student group												
CTA	96.5	95.8	95.1	96.6	100.0	100.0	100.0	97.5	49.4	100.0	100.0	100.0
San Diego USD								78.0	40.5			
Network Sites	95.1	94.7	94.3	93.6	96.0	90.4	97.7	98.3	34.9	91.7	81.3	72.8
State								80.5	35.5			

Note: Comparison data for attendance and promotion rates are not publicly available. The school, district, and state graduation rates and graduation rates having met a-g requirements are from the 2006-07 school year. Rates for 2007-08 were not available as of January 15, 2009.

Table 3: Seniors' plans for activity after graduation, 2007-08

	4-yr only %	4-yr + empl. %	2-yr only %	2-yr + empl. %	tech/ appr. %	empl. only %	mili-tary %	other %	#
Student group									
CTA	30.4	1.3	35.4	8.9	5.1	2.5	11.4	5.1	79
Network Sites	36.2	1.9	34.6	14.7	2.9	3.5	4.8	1.3	373

Table 4: Percentage of 2007-08 10th-grade students passing the CAHSEE

	English Language Arts		Mathematics	
	%	(n)	%	(n)
Student group				
CTA	77.4	137	82.4	136
San Diego USD	77	8,806	77	8,546
Network Sites	82.9	754	79.5	724
State	79		78	
CTA students, by race/ethnicity				
Hispanic	71.1	83	75.6	82
White	85.7	21	95.2	21
African-American	81.3	16	86.7	15
Asian	92.9	14	92.9	14
All Other	100.0	3	100.0	4

Table 5: Percentage of students scoring at or above proficiency on selected English CST exams, 2007-08

	English 9		English 10		English 11	
	%	(n)	%	(n)	%	(n)
Student group						
CTA	33.5	137	40.0	125	28.4	81
San Diego USD	50	9,009	40	8,515	38	7,682
Network Sites	44.2	802	41.6	883	40.3	1,297
State	49		41		37	

Table 6: Percentage of students scoring at or above proficiency on selected mathematics CST exams, 2007-08

	Algebra 1		Geometry		Algebra 2		Summative Mathematics	
	%	(n)	%	(n)	%	(n)	%	(n)
Student group								
CTA	8.1	74	0.7	134	1.3	75	20.0	25
San Diego USD	7	4,913	15	8,939	16	5,825	34	2,927
Network Sites	10.4	775	8.0	977	15.4	742	22.7	326
State	14		21		27		47	

Note: State and district rates calculated from publicly available data including only those students in grades 9 through 11.

Table 7: Percentage of students scoring at or above proficiency on selected science CST exams, 2007-08

	Biology		Chemistry		Physics		Earth Science		Life Science (10)	
	%	(n)	%	(n)	%	(n)	%	(n)	%	(n)
Student group										
CTA	25.2	119	9.3	65	5.7	122	—	0	—	0
San Diego USD	38	10,815	26	3,414	31	4,059	21	4,281	32	8,305
Network Sites	38	1,179	11.6	668	19	327	33.9	313	35.3	676
State	42		32		43		29		40	

Table 8: Percentage of students scoring at or above proficiency on selected history CST exams, 2007-08

	World History		U.S. History	
	%	(n)	%	(n)
Student group				
CTA	22.2	117	25.7	74
San Diego USD	31	8,747	36	7,499
Network Sites	26.4	921	39.6	1,272
State	33		38	

Table 9: Gender and racial/ethnic distribution of CTA students, 2006–07 and 2007-08

	Male		Female		Hispanic		White		African-American		Asian		All Other	
	%	#	%	#	%	#	%	#	%	#	%	#	%	#
School year														
2006-07	79.4	324	20.6	84	51.7	210	19.2	78	16.0	65	9.1	37	3.9	16
2007-08	77.0	345	23.0	103	53.8	241	17.4	78	13.6	61	10.5	47	4.7	21

Table 10: Attendance, promotion, and continuation rates of CTA students, 2006–07 and 2007-08

	Attendance Rates				Promotion from one grade to the next			12th grade graduation	Graduation having met a-g	Yearly continuation in program		
	9th	10th	11th	12th	9th	10th	11th			9th	10th	11th
	%	%	%	%	%	%	%	%	%	%	%	%
School year												
2006-07	96.8	95.9	96.8	97.1	100.0	100.0	100.0	100.0	42.1	100.0	88.8	96.5
2007-08	95.1	94.7	94.3	93.6	96.0	90.4	97.7	98.3	34.9	91.7	81.3	72.8

— No data

Table 11: CTA seniors' plans for activity after graduation, 2006-07 and 2007-08

	4-yr only	4-yr + empl.	2-yr only	2-yr + empl.	tech/ appr.	empl. only	mili-tary	other	
	%	%	%	%	%	%	%	%	#
School year									
2006-07	—	—	—	—	—	—	—	—	76
2007-08	30.4	1.3	35.4	8.9	5.1	2.5	11.4	5.1	79

— No data

Table 12: Percentage of CTA 10th-grade students passing the CAHSEE, 2006-07 and 2007-08

	English Language Arts		Mathematics	
	%	(n)	%	(n)
School year				
2006-07	69.1	94	75.5	94
2007-08	77.4	137	82.4	136

Table 13: Percentage of CTA students scoring at or above proficiency on selected English CST exams, 2006-07 and 2007-08

	English 9		English 10		English 11	
	%	(n)	%	(n)	%	(n)
School year						
2006-07	50.8	132	27.5	80	31.6	76
2007-08	33.5	137	40.0	125	28.4	81

Table 14: Percentage of CTA students scoring at or above proficiency on selected mathematics CST exams, 2006-07 and 2007-08

	Algebra 1		Geometry		Algebra 2		Summative Mathematices	
	%	(n)	%	(n)	%	(n)	%	(n)
School year								
2006-07	0.0	3	3.3	180	4.8	63	2.9	34
2007-08	8.1	74	0.7	134	1.3	75	20.0	25

— No data

Table 15: Percentage of CTA students scoring at or above proficiency on selected science CST exams, 2006-07 and 2007-08

	Biology		Chemistry		Physics		Earth Science		Life Science (10)	
	%	(n)	%	(n)	%	(n)	%	(n)	%	(n)
School year										
2006-07	26.0	150	—	0	6.3	127	—	—	26.3	80
2007-08	25.2	119	9.3	65	5.7	122	—	0	—	0

— No data

Table 16: Percentage of CTA students scoring at or above proficiency on selected history CST exams, 2006-07 and 2007-08

	World History		U.S. History	
	%	(n)	%	(n)
School year				
2006-07	19.0	79	28.9	76
2007-08	22.2	117	25.7	74

Appendix tables for the School of Digital Media and Design (DMD), an autonomous school operating within San Diego Unified School District (San Diego USD)

Table 1: Gender and racial/ethnic distribution of secondary students, 2007-08

	Male		Female		Hispanic		White		African-American		Asian		All Other	
	%	#	%	#	%	#	%	#	%	#	%	#	%	#
Student group														
DMD	47.7	201	52.3	220	33.7	142	23.8	100	17.8	75	17.3	73	7.4	31
San Diego USD	51.3	20818	48.5	19573	42.5	17,170	26.4	10,672	13.8	5,562	8.4	3,412	8.9	3,575
Network Sites	50.7	2,789	49.3	2,711	42.7	2,336	29.2	1,595	11.8	645	11.7	638	4.6	251
State	51.3		48.7		45.3		31.4		8.0		8.6		6.6	

Table 2: Attendance, promotion, and continuation rates of students, 2007-08

	Attendance Rates				Promotion from one grade to the next			12th grade graduation	Graduation having met a-g	Yearly continuation in program		
	9th	10th	11th	12th	9th	10th	11th			9th	10th	11th
	%	%	%	%	%	%	%	%	%	%	%	%
Student group												
DMD	95.4	95.1	95.1	98.3	84.7	85.0	93.3	98.8	48.8	96.2	98.3	96.7
San Diego USD								78.0	40.5			
Network Sites	95.1	94.7	94.3	93.6	96.0	90.4	97.7	98.3	34.9	91.7	81.3	72.8
State								80.5	35.5			

Note: Comparison data for attendance and promotion rates are not publicly available. The school, district, and state graduation rates and graduation rates having met a-g requirements are from the 2006-07 school year. Rates for 2007-08 were not available as of January 15, 2009.

Table 3: Seniors' plans for activity after graduation, 2007-08

	4-yr only %	4-yr + empl. %	2-yr only %	2-yr + empl. %	tech/ appr. %	empl. only %	mili-tary %	other %	#
Student group									
DMD	32.5	0.0	65.0	0.0	0.0	1.3	1.3	0.0	80
Network Sites	36.2	1.9	34.6	14.7	2.9	3.5	4.8	1.3	373

Table 4: Percentage of 2007-08 10th-grade students passing the CAHSEE

	English Language Arts		Mathematics	
	%	(n)	%	(n)
Student group				
DMD	83.6	116	74.1	116
San Diego USD	77	8,806	77	8,546
Network Sites	82.9	754	79.5	724
State	79		78	
DMD students, by race/ethnicity				
Hispanic	81.4	43	67.4	43
White	96.3	27	88.9	27
African-American	68.4	19	52.6	19
Asian	87.5	16	93.8	16
All Other	81.8	11	72.7	11

Table 5: Percentage of students scoring at or above proficiency on selected English CST exams, 2007-08

	English 9		English 10		English 11	
	%	(n)	%	(n)	%	(n)
Student group						
DMD	51.9	131	42.1	119	44.4	90
San Diego USD	50	9,009	40	8,515	38	7,682
Network Sites	44.2	802	41.6	883	40.3	1,297
State	49		41		37	

Table 6: Percentage of students scoring at or above proficiency on selected mathematics CST exams, 2007-08

	Algebra 1		Geometry		Algebra 2		Summative Mathematics	
	%	(n)	%	(n)	%	(n)	%	(n)
Student group								
DMD	17.6	97	7.1	128	6.7	90	17.7	17
San Diego USD	7	4,913	15	8,939	16	5,825	34	2,927
Network Sites	10.4	775	8.0	977	15.4	742	22.7	326
State	14		21		27		47	

Note: State and district rates calculated from publicly available data including only those students in grades 9 through 11.

Table 7: Percentage of students scoring at or above proficiency on selected science CST exams, 2007-08

	Biology		Chemistry		Physics		Earth Science		Life Science (10)	
	%	(n)	%	(n)	%	(n)	%	(n)	%	(n)
Student group										
DMD	62.2	140	2.1	47	—	0	38.9	144	43.6	117
San Diego USD	38	10,815	26	3,414	31	4,059	21	4,281	32	8,305
Network Sites	38	1,179	11.6	668	19	327	33.9	313	35.3	676
State	42		32		43		29		40	

Table 8: Percentage of students scoring at or above proficiency on selected history CST exams, 2007-08

	World History		U.S. History	
	%	(n)	%	(n)
Student group				
DMD	25.7	132	30.8	91
San Diego USD	31	8,747	36	7,499
Network Sites	26.4	921	39.6	1,272
State	33		38	

Appendix tables for Health Careers Academy at El Dorado High School (HCA-Placerville) within El Dorado Union School District

Table 1: Gender and racial/ethnic distribution of secondary students, 2007-08

	Male		Female		Hispanic		White		African-American		Asian		All Other	
	%	#	%	#	%	#	%	#	%	#	%	#	%	#
Student group														
HCA-Placerville	33.5	55	66.5	109	9.3	15	84.5	136	3.1	5	0.0	0	3.1	5
El Dorado High School	50.1	655	49.9	653	10.2	133	78.9	1,032	0.8	10	0.5	7	9.6	126
El Dorado Union High District	50.7	3,691	49.3	3,589	7.0	512	81.8	5,956	0.9	68	2.6	186	7.7	558
Network Sites	50.7	2,789	49.3	2,711	42.7	2,336	29.2	1,595	11.8	645	11.7	638	4.6	251
State	51.3		48.7		45.3		31.4		8.0		8.6		6.6	

Table 2: Attendance, promotion, and continuation rates of students, 2007-08

	Attendance Rates				Promotion from one grade to the next			12th grade graduation	Graduation having met a-g	Yearly continuation in program		
	9th	10th	11th	12th	9th	10th	11th			9th	10th	11th
	%	%	%	%	%	%	%	%	%	%	%	%
Student group												
HCA-Placerville	94.8	95.2	95.0	93.2	100.0	100.0	100.0	97.1	51.5	26.1	47.2	45.2
El Dorado High School								88.8	35.3			
El Dorado Union High District								87.5	46.0			
Network Sites	95.1	94.7	94.3	93.6	96.0	90.4	97.7	98.3	34.9	91.7	81.3	72.8
State								80.5	35.5			

Note: Comparison data for attendance and promotion rates are not publicly available. The school, district, and state graduation rates and graduation rates having met a-g requirements are from the 2006-07 school year. Rates for 2007-08 were not available as of January 15, 2009.

Table 3: Seniors' plans for activity after graduation, 2007-08

	4-yr only %	4-yr + empl. %	2-yr only %	2-yr + empl. %	tech/ appr. %	empl. only %	mili-tary %	other %	#
Student group									
HCA-Placerville	66.7	0.0	0.0	0.0	0.0	0.0	0.0	33.3	3
Network Sites	36.2	1.9	34.6	14.7	2.9	3.5	4.8	1.3	373

Table 4: Percentage of 2007-08 10th-grade students passing the CAHSEE

	English Language Arts		Mathematics	
	%	(n)	%	(n)
Student group				
HCA-Placerville	88.9	63	92.1	63
El Dorado High School	89	348	93	346
El Dorado Union High District	91	1,813	92	1,806
Network Sites	82.9	754	79.5	724
State	79		78	
HCA-Placerville students, by race/ethnicity				
Hispanic	83.3	6	100	6
White	93.9	49	91.8	49
African-American	75.0	4	100.0	4
Asian	—	—	—	—
All Other	100.0	2	100.0	2

Table 5: Percentage of students scoring at or above proficiency on selected English CST exams, 2007-08

	English 9		English 10		English 11	
	%	(n)	%	(n)	%	(n)
Student group						
HCA-Placerville	64.3	14	50.0	70	27.5	29
El Dorado High School	67	371	55	344	53	267
El Dorado Union High District	74	1,682	63	1,794	57	1,792
Network Sites	44.2	802	41.6	883	40.3	1,297
State	49		41		37	

Table 6: Percentage of students scoring at or above proficiency on selected mathematics CST exams, 2007-08

	Algebra 1		Geometry		Algebra 2		Summative Mathematics	
	%	(n)	%	(n)	%	(n)	%	(n)
Student group								
HCA-Placerville	12.5	40	15.1	33	30.4	23	60.0	5
El Dorado High School	26	322	36	251	31	188	56	59
El Dorado Union High District	32	1,611	42	1,367	47	1,229	69	459
Network Sites	10.4	775	8.0	977	15.4	742	22.7	326
State	14		21		27		47	

Note: State and district rates calculated from publicly available data including only those students in grades 9 through 11.

Table 7: Percentage of students scoring at or above proficiency on selected science CST exams, 2007-08

	Biology		Chemistry		Physics		Earth Science		Life Science (10)	
Student group	%	(n)	%	(n)	%	(n)	%	(n)	%	(n)
HCA-Placerville	47.0	66	21.0	19	—	0	44.5	18	44.6	65
El Dorado High School	55	331	43	171	*	5	60	337	49	322
El Dorado Union High District	67	1,748	49	1,014	84	39	63	1,619	64	1,760
Network Sites	38	1,179	11.6	668	19	327	33.9	313	35.3	676
State	42		32		43		29		40	

— No percentage reported; no students took the exam.

* Not reported because of the low number of students taking the exam.

Table 8: Percentage of students scoring at or above proficiency on selected history CST exams, 2007-08

	World History		U.S. History	
	%	(n)	%	(n)
Student group				
HCA-Placerville	47.0	68	31.0	29
El Dorado High School	50	332	55	267
El Dorado Union High District	54	1,789	60	1,752
Network Sites	26.4	921	39.6	1,272
State	33		38	

Appendix tables for Health Careers Academy at Palmdale High School (HCA-Palmdale) within Antelope Valley Union High School District

Table 1: Gender and racial/ethnic distribution of secondary students, 2007-08

	Male		Female		Hispanic		White		African-American		Asian		All Other	
	%	#	%	#	%	#	%	#	%	#	%	#	%	#
Student group														
HCA-Palmdale	21.0	102	79.0	384	69.8	338	12.4	60	12.2	59	4.8	23	0.8	4
Palmdale High School	50.3	1,654	49.7	1,634	63.3	2,081	13.9	457	19.4	639	0.9	31	2.4	80
Antelope Valley Union High	50.6	13,382	49.4	13,069	47.4	12,543	26.7	7,054	21.1	5,580	1.6	424	3.2	850
Network Sites	50.7	2,789	49.3	2,711	42.7	2,336	29.2	1,595	11.8	645	11.7	638	4.6	251
State	51.3		48.7		45.3		31.4		8.0		8.6		6.6	

Table 2: Attendance, promotion, and continuation rates of students, 2007-08

	Attendance Rates				Promotion from one grade to the next			12th grade graduation	Graduation having met a-g	Yearly continuation in program		
	9th	10th	11th	12th	9th	10th	11th			9th	10th	11th
	%	%	%	%	%	%	%	%	%	%	%	%
Student group												
HCA-Palmdale	95.2	93.8	92.5	93.9	95.7	70.7	97.0	95.3	90.9	95.7	54.5	66.0
Palmdale High School								60.3	19.7			
Antelope Valley Union High District								63.9	21.0			
Network Sites	95.1	94.7	94.3	93.6	96.0	90.4	97.7	98.3	34.9	91.7	81.3	72.8
State								80.5	35.5			

Note: Comparison data for attendance and promotion rates are not publicly available. The school, district, and state graduation rates and graduation rates having met a-g requirements are from the 2006-07 school year. Rates for 2007-08 were not available as of January 15, 2009.

Table 3: Seniors' plans for activity after graduation, 2007-08

	4-yr only %	4-yr + empl. %	2-yr only %	2-yr + empl. %	tech/ appr. %	empl. only %	mili-tary %	other %	#
Student group									
HCA-Palmdale	—	—	—	—	—	—	—	—	0
Network Sites	36.2	1.9	34.6	14.7	2.9	3.5	4.8	1.3	373

Table 4: Percentage of 2007-08 10th-grade students passing the CAHSEE

	English Language Arts		Mathematics	
	%	(n)	%	(n)
Student group				
HCA-Palmdale	88.0	167	82.7	168
Palmdale High School	73	784	71	781
Antelope Valley Union High	75	5,781	71	5,742
Network Sites	82.9	754	79.5	724
State	79		78	
HCA-Palmdale students, by race/ethnicity				
Hispanic	86.7	128	80.5	128
White	93.8	16	88.2	17
African-American	87.5	16	87.5	16
Asian	100.0	6	100.0	6
All Other	100.0	1	100.0	1

Table 5: Percentage of students scoring at or above proficiency on selected English CST exams, 2007-08

	English 9		English 10		English 11	
	%	(n)	%	(n)	%	(n)
Student group						
HCA-Palmdale	45.7	116	51.9	166	51.5	99
Palmdale High School	29	877	31	757	32	595
Antelope Valley Union High	39	5,958	34	5,635	28	5,479
Network Sites	44.2	802	41.6	883	40.3	1,297
State	49		41		37	

Table 6: Percentage of students scoring at or above proficiency on selected mathematics CST exams, 2007-08

	Algebra 1		Geometry		Algebra 2		Summative Mathematics	
	%	(n)	%	(n)	%	(n)	%	(n)
Student group								
HCA-Palmdale	11.1	108	9.4	171	17.5	103	—	0
Palmdale High School	8	874	5	626	6	429	10	99
Antelope Valley Union High	10	6,698	10	4,282	11	3,366	26	878
Network Sites	10.4	775	8.0	977	15.4	742	22.7	326
State	14		21		27		47	

Note: State and district rates calculated from publicly available data including only those students in grades 9 through 11.

Table 7: Percentage of students scoring at or above proficiency on selected science CST exams, 2007-08

	Biology		Chemistry		Physics		Earth Science		Life Science (10)	
	%	(n)	%	(n)	%	(n)	%	(n)	%	(n)
Student group										
HCA-Palmdale	31.5	210	0.0	6	—	0	—	0	22.9	166
Palmdale High School	22	947	10	272	—	0	10	327	21	696
Antelope Valley Union High	33	6,764	18	2,654	39	283	16	3,862	29	5,490
Network Sites	38	1,179	11.6	668	19	327	33.9	313	35.3	676
State	42		32		43		29		40	

Table 8: Percentage of students scoring at or above proficiency on selected history CST exams, 2007-08

	World History		U.S. History	
	%	(n)	%	(n)
Student group				
HCA-Palmdale	20.5	166	29.0	100
Palmdale High School	15	760	41	520
Antelope Valley Union High	22	5,750	30	5,196
Network Sites	26.4	921	39.6	1,272
State	33		38	

Table 9: Gender and racial/ethnic distribution of HCA—Palmdale students, 2006–07 and 2007-08

	Male		Female		Hispanic		White		African-American		Asian		All Other	
	%	#	%	#	%	#	%	#	%	#	%	#	%	#
School year														
2006-07	19.0	67	81.0	286	67.7	239	9.1	32	16.1	57	6.5	23	0.6	2
2007-08	21.0	102	79.0	384	69.8	338	12.4	60	12.2	59	4.8	23	0.8	4

Table 10: Attendance, promotion, and continuation rates of HCA—Palmdale students, 2006–07 and 2007-08

	Attendance Rates				Promotion from one grade to the next			12th grade graduation	Graduation having met a-g	Yearly continuation in program		
	9th	10th	11th	12th	9th	10th	11th			9th	10th	11th
	%	%	%	%	%	%	%	%	%	%	%	%
School year												
2006-07	97.5	98.0	98.9	100.0	87.2	93.8	100.0	100.0	88.1	85.9	40.2	98.2
2007-08	95.2	93.8	92.5	93.9	95.7	70.7	97.0	95.3	90.9	95.7	54.5	66.0

— No data

Table 11: HCA—Palmdale seniors' plans for activity after graduation, 2006-07 and 2007-08

	4-yr only	4-yr + empl.	2-yr only	2-yr + empl.	tech/ appr.	empl. only	mili-tary	other	
	%	%	%	%	%	%	%	%	#
School year									
2006-07	2.4	69.0	0.0	26.2	2.4	0.0	0.0	0.0	42
2007-08	—	—	—	—	—	—	—	—	

— No data

Table 12: Percentage of HCA—Palmdale 10th-grade students passing the CAHSEE, 2006-07 and 2007-08

	English Language Arts		Mathematics	
	%	(n)	%	(n)
School year				
2006-07	86.6	112	71.4	112
2007-08	88.0	167	82.7	168

Table 13: Percentage of HCA—Palmdale students scoring at or above proficiency on selected English CST exams, 2006-07 and 2007-08

	English 9		English 10		English 11	
	%	(n)	%	(n)	%	(n)
School year						
2006-07	59.2	142	45.5	112	75.4	57
2007-08	45.7	116	51.9	166	51.5	99

Table 14: Percentage of HCA—Palmdale students scoring at or above proficiency on selected mathematics CST exams, 2006-07 and 2007-08

	Algebra 1		Geometry		Algebra 2		Summative Mathematices	
	%	(n)	%	(n)	%	(n)	%	(n)
School year								
2006-07	11.1	135	14.7	116	7.3	55	—	—
2007-08	11.1	108	9.4	171	17.5	103	—	0

— No data

Table 15: Percentage of HCA—Palmdale students scoring at or above proficiency on selected science CST exams, 2006-07 and 2007-08

	Biology		Chemistry		Physics		Earth Science		Life Science (10)	
	%	(n)	%	(n)	%	(n)	%	(n)	%	(n)
School year										
2006-07	30.3	208	42.1	19	—	—	—	—	—	—
2007-08	31.5	210	0.0	6	—	0	—	0	22.9	166

— No data

Table 16: Percentage of HCA—Palmdale students scoring at or above proficiency on selected history CST exams, 2006-07 and 2007-08

	World History		U.S. History	
	%	(n)	%	(n)
School year				
2006-07	31.3	112	73.7	57
2007-08	20.5	166	29.0	100

Appendix tables for Health Professions High School (Health Professions HS), an autonomous school operating within Sacramento City Unified School District (Sacramento City USD)

Table 1: Gender and racial/ethnic distribution of secondary students, 2007-08

	Male		Female		Hispanic		White		African-American		Asian		All Other	
	%	#	%	#	%	#	%	#	%	#	%	#	%	#
Student group														
Health Professions HS	32.0	128	68.0	272	33.0	131	18.4	73	37.5	149	6.5	26	4.5	18
Sacramento City Unified	51.1	7,373	48.9	7,068	27.9	4,034	20.5	2,962	21.7	3,139	24.4	3,517	5.5	789
Network Sites	50.7	2,789	49.3	2,711	42.7	2,336	29.2	1,595	11.8	645	11.7	638	4.6	251
State	51.3		48.7		45.3		31.4		8.0		8.6		6.6	

Table 2: Attendance, promotion, and continuation rates of students, 2007-08

	Attendance Rates				Promotion from one grade to the next			12th grade graduation	Graduation having met a-g	Yearly continuation in program		
	9th	10th	11th	12th	9th	10th	11th			9th	10th	11th
	%	%	%	%	%	%	%	%	%	%	%	%
Student group												
Health Professions HS	92.2	91.5	93.3	—	100.0	100.0	99.1	—	—	100.0	100.0	100.0
Sacramento City Unified								75.6	40.7			
Network Sites	95.1	94.7	94.3	93.6	96.0	90.4	97.7	98.3	34.9	91.7	81.3	72.8
State								80.5	35.5			

Note: Comparison data for attendance and promotion rates are not publicly available. The school, district, and state graduation rates and graduation rates having met a-g requirements are from the 2006-07 school year. Rates for 2007-08 were not available as of January 15, 2009.

Table 3: Seniors' plans for activity after graduation, 2007-08

	4-yr only %	4-yr + empl. %	2-yr only %	2-yr + empl. %	tech/ appr. %	empl. only %	mili-tary %	other %	#
Student group									
Health Professions HS	—	—	—	—	—	—	—	—	0
Network Sites	36.2	1.9	34.6	14.7	2.9	3.5	4.8	1.3	373

Table 4: Percentage of 2007-08 10th-grade students passing the CAHSEE

	English Language Arts		Mathematics	
	%	(n)	%	(n)
Student group				
Health Professions HS	82.9	111	76.6	111
Sacramento City Unified	75	3,241	76	3,239
Network Sites	82.9	754	79.5	724
State	79		78	
Health Professions HS students, by race/ethnicity				
Hispanic	83.8	37	75.7	37
White	100.0	18	88.9	18
African-American	66.7	39	64.1	39
Asian	100.0	12	91.7	12
All Other	100.0	5	100	5

Table 5: Percentage of students scoring at or above proficiency on selected English CST exams, 2007-08

	English 9		English 10		English 11	
	%	(n)	%	(n)	%	(n)
Student group						
Health Professions HS	38.4	138	33.6	104	35.9	106
Sacramento City Unified	46	3,462	38	3,213	35	2,884
Network Sites	44.2	802	41.6	883	40.3	1,297
State	49		41		37	

Table 6: Percentage of students scoring at or above proficiency on selected mathematics CST exams, 2007-08

	Algebra 1		Geometry		Algebra 2		Summative Mathematics	
	%	(n)	%	(n)	%	(n)	%	(n)
Student group								
Health Professions HS	4.9	123	2.5	118	16.9	77	21.7	23
Sacramento City Unified	10	2,991	16	2,854	24	1,769	42	845
Network Sites	10.4	775	8.0	977	15.4	742	22.7	326
State	14		21		27		47	

Note: State and district rates calculated from publicly available data including only those students in grades 9 through 11.

Table 7: Percentage of students scoring at or above proficiency on selected science CST exams, 2007-08

	Biology		Chemistry		Physics		Earth Science		Life Science (10)	
	%	(n)	%	(n)	%	(n)	%	(n)	%	(n)
Student group										
Health Professions HS	26.1	115	4.0	126	18.5	76	—	0	25.0	104
Sacramento City Unified	38	3,337	21	1,622	39	521	18	2,079	34	3,106
Network Sites	38	1,179	11.6	668	19	327	33.9	313	35.3	676
State	42		32		43		29		40	

Table 8: Percentage of students scoring at or above proficiency on selected history CST exams, 2007-08

	World History		U.S. History	
	%	(n)	%	(n)
Student group				
Health Professions HS	21.1	123	31.0	97
Sacramento City Unified	29	3,363	33	2,814
Network Sites	26.4	921	39.6	1,272
State	33		38	

Table 9: Gender and racial/ethnic distribution of Health Professions HS students, 2006–07 and 2007-08

	Male		Female		Hispanic		White		African-American		Asian		All Other	
	%	#	%	#	%	#	%	#	%	#	%	#	%	#
School year														
2006-07	32.9	83	67.1	169	30.7	77	19.5	49	37.8	95	6.4	16	5.6	14
2007-08	32.0	128	68.0	272	33.0	131	18.4	73	37.5	149	6.5	26	4.5	18

Table 10: Attendance, promotion, and continuation rates of Health Professions HS students, 2006–07 and 2007-08

	Attendance Rates				Promotion from one grade to the next			12th grade graduation	Graduation having met a-g	Yearly continuation in program		
	9th	10th	11th	12th	9th	10th	11th			9th	10th	11th
	%	%	%	%	%	%	%	%	%	%	%	%
School year												
2006-07	93.4	93.4	—	—	100.0	100.0	—	—	—	96.0	95.3	—
2007-08	92.2	91.5	93.3	—	100.0	100.0	99.1	—	—	100.0	100.0	100.0

— No data

Table 11: Health Professions HS seniors' plans for activity after graduation, 2006-07 and 2007-08

	4-yr only	4-yr + empl.	2-yr only	2-yr + empl.	tech/ appr.	empl. only	mili-tary	other	
	%	%	%	%	%	%	%	%	#
School year									
2006-07	—	—	—	—	—	—	—	—	0
2007-08	—	—	—	—	—	—	—	—	0

— No data

Table 12: Percentage of Health Professions HS 10th-grade students passing the CAHSEE, 2006-07 and 2007-08

	English Language Arts		Mathematics	
	%	(n)	%	(n)
School year				
2006-07	82.1	123	75.5	124
2007-08	82.9	111	76.6	111

Table 13: Percentage of Health Professions HS students scoring at or above proficiency on selected English CST exams, 2006-07 and 2007-08

	English 9		English 10		English 11	
	%	(n)	%	(n)	%	(n)
School year						
2006-07	43.7	119	38.5	122	—	0
2007-08	38.4	138	33.6	104	35.9	106

Table 14: Percentage of Health Professions HS students scoring at or above proficiency on selected mathematics CST exams, 2006-07 and 2007-08

	Algebra 1		Geometry		Algebra 2		Summative Mathematices	
	%	(n)	%	(n)	%	(n)	%	(n)
School year								
2006-07	5.0	100	7.2	83	16.7	24	—	0
2007-08	4.9	123	2.5	118	16.9	77	21.7	23

— No data

Table 15: Percentage of Health Professions HS students scoring at or above proficiency on selected science CST exams, 2006-07 and 2007-08

	Biology		Chemistry		Physics		Earth Science		Life Science (10)	
	%	(n)	%	(n)	%	(n)	%	(n)	%	(n)
School year										
2006-07	15.5	116	8.2	85	—	0	—	0	34.2	120
2007-08	26.1	115	4.0	126	18.5	76	—	0	25.0	104

— No data

Table 16: Percentage of Health Professions HS students scoring at or above proficiency on selected history CST exams, 2006-07 and 2007-08

	World History		U.S. History	
	%	(n)	%	(n)
School year				
2006-07	22.7	75	—	0
2007-08	21.1	123	31.0	97

— No data

Appendix tables for Information Systems Academy (ISA) at Antelope Valley High School within Antelope Valley Union School District (Antelope Valley USD)

Table 1: Gender and racial/ethnic distribution of secondary students, 2007-08

	Male		Female		Hispanic		White		African-American		Asian		All Other	
	%	#	%	#	%	#	%	#	%	#	%	#	%	#
Student group														
ISA	59.9	100	40.1	67	46.7	78	25.1	42	26.3	44	1.2	2	0.6	1
Antelope Valley High School	49.4	1,029	50.6	1,055	46.0	959	15.5	322	35.6	741	0.8	16	2.2	46
Antelope Valley USD	50.6	13,382	49.4	13,069	47.4	12,543	26.7	7,054	21.1	5,580	1.6	424	3.2	850
Network Sites	50.7	2,789	49.3	2,711	42.7	2,336	29.2	1,595	11.8	645	11.7	638	4.6	251
State	51.3		48.7		45.3		31.4		8.0		8.6		6.6	

Table 2: Attendance, promotion, and continuation rates of students, 2007-08

	Attendance Rates				Promotion from one grade to the next			12th grade graduation	Graduation having met a-g	Yearly continuation in program		
	9th	10th	11th	12th	9th	10th	11th			9th	10th	11th
	%	%	%	%	%	%	%	%	%	%	%	%
Student group												
ISA	97.4	94.7	95.4	91.1	100.0	100.0	100.0	92.9	61.4	28.1	43.1	85.7
Antelope Valley High School								65.3	20.5			
Antelope Valley USD								63.9	21.0			
Network Sites	95.1	94.7	94.3	93.6	96.0	90.4	97.7	98.3	34.9	91.7	81.3	72.8
State								80.5	35.5			

Note: Comparison data for attendance and promotion rates are not publicly available. The school, district, and state graduation rates and graduation rates having met a-g requirements are from the 2006-07 school year. Rates for 2007-08 were not available as of January 15, 2009.

Table 3: Seniors' plans for activity after graduation, 2007-08

	4-yr only %	4-yr + empl. %	2-yr only %	2-yr + empl. %	tech/ appr. %	empl. only %	mili-tary %	other %	#
Student group									
ISA	0.0	0.0	68.2	0.0	4.5	15.9	11.4	0.0	44
Network Sites	36.2	1.9	34.6	14.7	2.9	3.5	4.8	1.3	373

Table 4: Percentage of 2007-08 10th-grade students passing the CAHSEE

	English Language Arts		Mathematics	
	%	(n)	%	(n)
Student group				
ISA	64.4	59	66.7	60
Antelope Valley High School	56	425	54	225
Antelope Valley USD	75	5,781	71	5,742
Network Sites	82.9	754	79.5	724
State	79		78	
ISA students, by race/ethnicity				
Hispanic	56.3	32	62.5	32
White	90.0	10	90.9	11
African-American	62.5	16	56.3	16
Asian	—	—	—	—
All Other	100.0	1	100.0	1

Table 5: Percentage of students scoring at or above proficiency on selected English CST exams, 2007-08

	English 9		English 10		English 11	
	%	(n)	%	(n)	%	(n)
Student group						
ISA	31.3	32	19.6	51	16.6	30
Antelope Valley High School	25	470	17	409	21	314
Antelope Valley USD	39	5,958	34	5,635	28	5,479
Network Sites	44.2	802	41.6	883	40.3	1,297
State	49		41		37	

Table 6: Percentage of students scoring at or above proficiency on selected mathematics CST exams, 2007-08

	Algebra 1		Geometry		Algebra 2		Summative Mathematics	
	%	(n)	%	(n)	%	(n)	%	(n)
Student group								
ISA	6.7	45	0.0	33	4.3	23	0.0	7
Antelope Valley High School	4	557	2	320	6	147	11	44
Antelope Valley USD	10	6,698	10	4,282	11	3,366	26	878
Network Sites	10.4	775	8.0	977	15.4	742	22.7	326
State	14		21		27		47	

Note: State and district rates calculated from publicly available data including only those students in grades 9 through 11.

Table 7: Percentage of students scoring at or above proficiency on selected science CST exams, 2007-08

	Biology		Chemistry		Physics		Earth Science		Life Science (10)	
	%	(n)	%	(n)	%	(n)	%	(n)	%	(n)
Student group										
ISA	28.0	50	5.6	18	33.3	6	24.0	25	—	0
Antelope Valley High School	19	485	6	129	48	25	6	342	15	395
Antelope Valley USD	33	6,764	18	2,654	39	283	16	3,862	29	5,490
Network Sites	38	1,179	11.6	668	19	327	33.9	313	35.3	676
State	42		32		43		29		40	

Table 8: Percentage of students scoring at or above proficiency on selected history CST exams, 2007-08

	World History		U.S. History	
	%	(n)	%	(n)
Student group				
ISA	11.6	52	29.0	31
Antelope Valley High School	11	377	27	298
Antelope Valley USD	22	5,750	30	5,196
Network Sites	26.4	921	39.6	1,272
State	33		38	

Table 9: Gender and racial/ethnic distribution of ISA students, 2006–07 and 2007-08

	Male		Female		Hispanic		White		African-American		Asian		All Other	
	%	#	%	#	%	#	%	#	%	#	%	#	%	#
School year														
2006-07	56.1	128	43.9	100	47.8	109	21.5	49	26.8	61	1.3	3	2.6	6
2007-08	59.9	100	40.1	67	46.7	78	25.1	42	26.3	44	1.2	2	0.6	1

Table 10: Attendance, promotion, and continuation rates of ISA students, 2006–07 and 2007-08

	Attendance Rates				Promotion from one grade to the next			12th grade graduation	Graduation having met a-g	Yearly continuation in program		
	9th	10th	11th	12th	9th	10th	11th			9th	10th	11th
	%	%	%	%	%	%	%	%	%	%	%	%
School year												
2006-07	—	—	—	—	100.0	100.0	100.0	97.3	—	—	84.1	65.7
2007-08	97.4	94.7	95.4	91.1	100.0	100.0	100.0	92.9	61.4	28.1	43.1	85.7

— No data

Table 11: ISA seniors' plans for activity after graduation, 2006-07 and 2007-08

	4-yr only	4-yr + empl.	2-yr only	2-yr + empl.	tech/ appr.	empl. only	mili-tary	other	missing	
	%	%	%	%	%	%	%	%	%	#
School year										
2006-07	0.0	0.0	4.9	46.3	4.9	7.3	4.9	2.4	29.3	41
2007-08	0.0	0.0	68.2	0.0	4.5	15.9	11.4	0.0	0.0	44

— No data

Table 12: Percentage of ISA 10th-grade students passing the CAHSEE, 2006-07 and 2007-08

	English Language Arts		Mathematics	
	%	(n)	%	(n)
School year				
2006-07	76.0	50	74.0	50
2007-08	64.4	59	66.7	60

Table 13: Percentage of ISA students scoring at or above proficiency on selected English CST exams, 2006-07 and 2007-08

	English 9		English 10		English 11	
	%	(n)	%	(n)	%	(n)
School year						
2006-07	27.3	66	27.1	48	18.3	71
2007-08	31.3	32	19.6	51	16.6	30

Table 14: Percentage of ISA students scoring at or above proficiency on selected mathematics CST exams, 2006-07 and 2007-08

	Algebra 1		Geometry		Algebra 2		ive Mathematices	
	%	(n)	%	(n)	%	(n)	%	(n)
School year								
2006-07	2.7	75	2.1	48	16.7	36	0.0	8
2007-08	6.7	45	0.0	33	4.3	23	0.0	7

— No data

Table 15: Percentage of ISA students scoring at or above proficiency on selected science CST exams, 2006-07 and 2007-08

	Biology		Chemistry		Physics		Earth Science		Life Science (10)	
	%	(n)	%	(n)	%	(n)	%	(n)	%	(n)
School year										
2006-07	28.8	66	16.7	30	50.0	2	10.9	46	—	—
2007-08	28.0	50	5.6	18	33.3	6	24.0	25	—	0

— No data

Table 16: Percentage of ISA students scoring at or above proficiency on selected history CST exams, 2006-07 and 2007-08

	World History		U.S. History	
	%	(n)	%	(n)
School year				
2006-07	21.3	47	17.1	70
2007-08	11.6	52	29.0	31

Appendix tables for Life Academy of Health and Bioscience (Life Academy), an autonomous school operating wihtin Oakland Unified School District (Oakland USD)

Table 1: Gender and racial/ethnic distribution of secondary students, 2007-08

	Male		Female		Hispanic		White		African-American		Asian		All Other	
	%	#	%	#	%	#	%	#	%	#	%	#	%	#
Student group														
Life Academy	39.3	94	60.7	145	73.4	168	0.9	2	11.4	26	10.0	23	4.4	10
Oakland USD	56.1	6439	43.9	6273	33.0	4190	4.1	515	41.7	5300	16.5	2098	4.8	609
Network Sites	50.7	2,789	49.3	2,711	42.7	2,336	29.2	1,595	11.8	645	11.7	638	4.6	251
State	51.3		48.7		45.3		31.4		8.0		8.6		6.6	

Table 2: Attendance, promotion, and continuation rates of students, 2007-08

	Attendance Rates				Promotion from one grade to the next			12th grade graduation	Graduation having met a-g	Yearly continuation in program		
	9th	10th	11th	12th	9th	10th	11th			9th	10th	11th
	%	%	%	%	%	%	%	%	%	%	%	%
Student group												
Life Academy	98.0	98.3	97.0	98.5	100.0	98.4	98.4	92.3	61.5	96.7	98.4	98.4
Oakland USD								82.0	31.5			
Network Sites	95.1	94.7	94.3	93.6	96.0	90.4	97.7	98.3	34.9	91.7	81.3	72.8
State								80.5	35.5			

Note: Comparison data for attendance and promotion rates are not publicly available. The school, district, and state graduation rates and graduation rates having met a-g requirements are from the 2006-07 school year. Rates for 2007-08 were not available as of January 15, 2009.

Table 3: Seniors' plans for activity after graduation, 2007-08

	4-yr only %	4-yr + empl. %	2-yr only %	2-yr + empl. %	tech/ appr. %	empl. only %	mili-tary %	other %	#
Student group									
Life Academy	67.3	0.0	17.3	11.5	1.9	1.9	0.0	0.0	52
Network Sites	36.2	1.9	34.6	14.7	2.9	3.5	4.8	1.3	373

Table 4: Percentage of 2007-08 10th-grade students passing the CAHSEE

	English Language Arts		Mathematics	
	%	(n)	%	(n)
Student group				
Life Academy	71.9	64	70.3	64
Oakland USD	60	2,420	61	2,449
Network Sites	82.9	754	79.5	724
State	79		78	
Life Academy students, by race/ethnicity				
Hispanic	75.6	45	71.1	45
White	0.0	1	0.0	1
African-American	75.0	4	100.0	4
Asian	75.0	8	75.0	8
All Other	50.0	2	50.0	2

Table 5: Percentage of students scoring at or above proficiency on selected English CST exams, 2007-08

	English 9		English 10		English 11	
	%	(n)	%	(n)	%	(n)
Student group						
Life Academy	25.0	60	19.3	62	10.0	60
Oakland USD	27	2,779	22	2,470	21	1,901
Network Sites	44.2	802	41.6	883	40.3	1,297
State	49		41		37	

Table 6: Percentage of students scoring at or above proficiency on selected mathematics CST exams, 2007-08

	Algebra 1		Geometry		Algebra 2		Summative Mathematics	
	%	(n)	%	(n)	%	(n)	%	(n)
Student group								
Life Academy	26.6	60	9.9	61	—	0	1.7	59
Oakland USD	3	7,411	9	4,618	11	2,734	37	535
Network Sites	10.4	775	8.0	977	15.4	742	22.7	326
State	14		21		27		47	

Note: State and district rates calculated from publicly available data including only those students in grades 9 through 11.

Table 7: Percentage of students scoring at or above proficiency on selected science CST exams, 2007-08

	Biology		Chemistry		Physics		Earth Science		Life Science (10)	
	%	(n)	%	(n)	%	(n)	%	(n)	%	(n)
Student group										
Life Academy	14.4	118	5.1	59	—	0	—	0	34.4	61
Oakland USD	19	3,598	13	1,341	6	745	18	611	21	2,132
Network Sites	38	1,179	11.6	668	19	327	33.9	313	35.3	676
State	42		32		43		29		40	

Table 8: Percentage of students scoring at or above proficiency on selected history CST exams, 2007-08

	World History		U.S. History	
	%	(n)	%	(n)
Student group				
Life Academy	9.8	61	8.3	60
Oakland USD	11	2,688	20	1,793
Network Sites	26.4	921	39.6	1,272
State	33		38	

Appendix tables for Manufacturing Production Technology Academy (MPTA), located at Laguna Creek High School within Elk Grove Unified School District (Elk Grove USD)

Table 1: Gender and racial/ethnic distribution of secondary students, 2007-08

	Male		Female		Hispanic		White		African-American		Asian		All Other	
	%	#	%	#	%	#	%	#	%	#	%	#	%	#
Student group														
MPTA	79.6	117	20.4	30	16.3	24	31.3	46	14.3	21	27.2	40	10.9	16
Laguna Creek High School	51.9	1,198	48.1	1,111	17.0	392	22.4	517	24.4	563	18.2	421	18.0	416
Elk Grove USD	51.1	9,808	48.9	9,367	19.2	3,684	27.7	5,302	20.1	3,859	19.0	3,640	14.0	2,690
Network Sites	50.7	2,789	49.3	2,711	42.7	2,336	29.2	1,595	11.8	645	11.7	638	4.6	251
State	51.3		48.7		45.3		31.4		8.0		8.6		6.6	

Table 2: Attendance, promotion, and continuation rates of students, 2007-08

	Attendance Rates				Promotion from one grade to the next			12th grade graduation	Graduation having met a-g	Yearly continuation in program		
	9th	10th	11th	12th	9th	10th	11th			9th	10th	11th
	%	%	%	%	%	%	%	%	%	%	%	%
Student group												
MPTA	95.5	97.2	96.7	96.8	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Laguna Creek High School								87.4	38.7			
Elk Grove USD								80.7	39.1			
Network Sites	95.1	94.7	94.3	93.6	96.0	90.4	97.7	98.3	34.9	91.7	81.3	72.8
State								80.5	35.5			

Note: Comparison data for attendance and promotion rates are not publicly available. The school, district, and state graduation rates and graduation rates having met a-g requirements are from the 2006-07 school year. Rates for 2007-08 were not available as of January 15, 2009.

Table 3: Seniors' plans for activity after graduation, 2007-08

	4-yr only %	4-yr + empl. %	2-yr only %	2-yr + empl. %	tech/ appr. %	empl. only %	mili-tary %	other %	#
Student group									
MPTA	19.2	11.5	0.0	61.5	3.8	0.0	3.8	0.0	26
Network Sites	36.2	1.9	34.6	14.7	2.9	3.5	4.8	1.3	373

Table 4: Percentage of 2007-08 10th-grade students passing the CAHSEE

	English Language Arts		Mathematics	
	%	(n)	%	(n)
Student group				
MPTA	92.9	42	92.9	42
Laguna Creek High School	82	575	80	575
Elk Grove USD	84	4,621	85	4,615
Network Sites	82.9	754	79.5	724
State	79		78	
MPTA students, by race/ethnicity				
Hispanic	88.9	9	88.9	9
White	100.0	15	93.3	15
African-American	83.3	6	83.3	6
Asian	100.0	6	100	6
All Other	83.3	6	100	6

Table 5: Percentage of students scoring at or above proficiency on selected English CST exams, 2007-08

	English 9		English 10		English 11	
	%	(n)	%	(n)	%	(n)
Student group						
MPTA	59.6	52	66.6	42	46.1	26
Laguna Creek High School	58	635	42	557	39	494
Elk Grove USD	55	4,707	46	4,594	38	4,343
Network Sites	44.2	802	41.6	883	40.3	1,297
State	49		41		37	

Table 6: Percentage of students scoring at or above proficiency on selected mathematics CST exams, 2007-08

	Algebra 1		Geometry		Algebra 2		Summative Mathematics	
	%	(n)	%	(n)	%	(n)	%	(n)
Student group								
MPTA	7.5	40	26.5	34	30.7	26	53.3	15
Laguna Creek High School	13	706	17	439	37	262	50	131
Elk Grove USD	18	4,441	18	3,786	38	2,434	48	1,211
Network Sites	10.4	775	8.0	977	15.4	742	22.7	326
State	14		21		27		47	

Note: State and district rates calculated from publicly available data including only those students in grades 9 through 11.

Table 7: Percentage of students scoring at or above proficiency on selected science CST exams, 2007-08

	Biology		Chemistry		Physics		Earth Science		Life Science (10)	
	%	(n)	%	(n)	%	(n)	%	(n)	%	(n)
Student group										
MPTA	68.1	47	75.0	4	56.5	23	37.2	43	64.3	42
Laguna Creek High School	42	676	48	182	66	70	30	569	43	552
Elk Grove USD	43	4,826	37	2,123	70	411	35	4,307	44	4,526
Network Sites	38	1,179	11.6	668	19	327	33.9	313	35.3	676
State	42		32		43		29		40	

Table 8: Percentage of students scoring at or above proficiency on selected history CST exams, 2007-08

	World History		U.S. History	
	%	(n)	%	(n)
Student group				
MPTA	58.6	41	61.5	26
Laguna Creek High School	30	640	37	489
Elk Grove USD	37	4,794	40	4,251
Network Sites	26.4	921	39.6	1,272
State	33		38	

Table 9: Gender and racial/ethnic distribution of MPTA students, 2006–07 and 2007-08

	Male		Female		Hispanic		White		African-American		Asian		All Other	
	%	#	%	#	%	#	%	#	%	#	%	#	%	#
School year														
2006-07	75.6	118	24.4	38	17.5	27	31.2	48	14.9	23	21.4	33	14.9	23
2007-08	79.6	117	20.4	30	16.3	24	31.3	46	14.3	21	27.2	40	10.9	16

Table 10: Attendance, promotion, and continuation rates of MPTA students, 2006–07 and 2007-08

	Attendance Rates				Promotion from one grade to the next			12th grade graduation	Graduation having met a-g	Yearly continuation in program		
	9th	10th	11th	12th	9th	10th	11th			9th	10th	11th
	%	%	%	%	%	%	%	%	%	%	%	%
School year												
2006-07	92.5	91.3	93.2	90.7	91.2	100.0	100.0	100.0	100.0	—	—	—
2007-08	95.5	97.2	96.7	96.8	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

— No data

Table 11: MPTA seniors' plans for activity after graduation, 2006-07 and 2007-08

	4-yr only	4-yr + empl.	2-yr only	2-yr + empl.	tech/ appr.	empl. only	mili-tary	other	
	%	%	%	%	%	%	%	%	#
School year									
2006-07	48.4	0.0	41.9	0.0	0.0	6.5	3.2	0.0	31
2007-08	19.2	11.5	0.0	61.5	3.8	0.0	3.8	0.0	26

Table 12: Percentage of MPTA 10th-grade students passing the CAHSEE, 2006-07 and 2007-08

	English Language Arts		Mathematics	
	%	(n)	%	(n)
School year				
2006-07	100.0	32	93.8	32
2007-08	92.9	42	92.9	42

Table 13: Percentage of MPTA students scoring at or above proficiency on selected English CST exams, 2006-07 and 2007-08

	English 9		English 10		English 11	
	%	(n)	%	(n)	%	(n)
School year						
2006-07	64.9	57	37.6	32	39.3	28
2007-08	59.6	52	66.6	42	46.1	26

Table 14: Percentage of MPTA students scoring at or above proficiency on selected mathematics CST exams, 2006-07 and 2007-08

	Algebra 1		Geometry		Algebra 2		Summative Mathematices	
	%	(n)	%	(n)	%	(n)	%	(n)
School year								
2006-07	19.5	41	32.4	34	29.2	24	—	—
2007-08	7.5	40	26.5	34	30.7	26	53.3	15

— No data

Table 15: Percentage of MPTA students scoring at or above proficiency on selected science CST exams, 2006-07 and 2007-08

	Biology		Chemistry		Physics		Earth Science		Life Science (10)	
	%	(n)	%	(n)	%	(n)	%	(n)	%	(n)
School year										
2006-07	40.0	35	77.8	9	41.7	24	42.2	45	59.4	32
2007-08	68.1	47	75	4	56.5	23	37.2	43	64.3	42

Table 16: Percentage of MPTA students scoring at or above proficiency on selected history CST exams, 2006-07 and 2007-08

	World History		U.S. History	
	%	(n)	%	(n)
School year				
2006-07	51.5	33	44.4	27
2007-08	58.6	41	61.5	26

Appendix tables for Oakland School for the Arts (OSA), an autonomous charter school located within Oakland Unified School District (Oakland USD) boundaries

Table 1: Gender and racial/ethnic distribution of secondary students, 2007-08

	Male		Female		Hispanic		White		African-American		Asian		All Other	
	%	#	%	#	%	#	%	#	%	#	%	#	%	#
Student group														
OSA	33.0	64	67.0	130	11.2	20	13.5	24	55.1	98	2.8	5	17.4	31
Oakland USD	56.1	6439	43.9	6273	33.0	4190	4.1	515	41.7	5300	16.5	2098	4.8	609
Network Sites	50.7	2,789	49.3	2,711	42.7	2,336	29.2	1,595	11.8	645	11.7	638	4.6	251
State	51.3		48.7		45.3		31.4		8.0		8.6		6.6	

Table 2: Attendance, promotion, and continuation rates of students, 2007-08

	Attendance Rates				Promotion from one grade to the next			12th grade graduation	Graduation having met a-g	Yearly continuation in program		
	9th	10th	11th	12th	9th	10th	11th			9th	10th	11th
	%	%	%	%	%	%	%	%	%	%	%	%
Student group												
OSA	94.7	96.2	94.3	93.8	100.0	100.0	100.0	96.4	98.2	95.5	92.2	97.7
Oakland USD								82.0	31.5			
Network Sites	95.1	94.7	94.3	93.6	96.0	90.4	97.7	98.3	34.9	91.7	81.3	72.8
State								80.5	35.5			

Note: Comparison data for attendance and promotion rates are not publicly available. The school, district, and state graduation rates and graduation rates having met a-g requirements are from the 2006-07 school year. Rates for 2007-08 were not available as of January 15, 2009.

Table 3: Seniors' plans for activity after graduation, 2007-08

	4-yr only %	4-yr + empl. %	2-yr only %	2-yr + empl. %	tech/ appr. %	empl. only %	mili-tary %	other %	#
Student group									
OSA	79.6	0.0	16.3	0.0	2.0	2.0	0.0	0.0	49
Network Sites	36.2	1.9	34.6	14.7	2.9	3.5	4.8	1.3	373

Table 4: Percentage of 2007-08 10th-grade students passing the CAHSEE

	English Language Arts		Mathematics	
	%	(n)	%	(n)
Student group				
OSA	97.9	48	70	50
Oakland USD	60	2,420	61	2,449
Network Sites	82.9	754	79.5	724
State	79		78	
OSA students, by race/ethnicity				
Hispanic	100	7	100	7
White	100	1	100	2
African-American	96.7	30	58.1	31
Asian	—	—	—	—
All Other	100	5	60	5

Table 5: Percentage of students scoring at or above proficiency on selected English CST exams, 2007-08

	English 9		English 10		English 11	
	%	(n)	%	(n)	%	(n)
Student group						
OSA	69.0	42	52.0	50	60.9	41
Oakland USD	27	2,779	22	2,470	21	1,901
Network Sites	44.2	802	41.6	883	40.3	1,297
State	49		41		37	

Table 6: Percentage of students scoring at or above proficiency on selected mathematics CST exams, 2007-08

	Algebra 1		Geometry		Algebra 2		Summative Mathematics	
	%	(n)	%	(n)	%	(n)	%	(n)
Student group								
OSA	4.5	66	8.1	49	—	0	11.8	17
Oakland USD	3	7,411	9	4,618	11	2,734	37	535
Network Sites	10.4	775	8.0	977	15.4	742	22.7	326
State	14		21		27		47	

Note: State and district rates calculated from publicly available data including only those students in grades 9 through 11.

Table 7: Percentage of students scoring at or above proficiency on selected science CST exams, 2007-08

	Biology		Chemistry		Physics		Earth Science		Life Science (10)	
	%	(n)	%	(n)	%	(n)	%	(n)	%	(n)
Student group										
OSA	33.3	90	7.3	41	—	0	—	0	38.0	50
Oakland USD	19	3,598	13	1,341	6	745	18	611	21	2,132
Network Sites	38	1,179	11.6	668	19	327	33.9	313	35.3	676
State	42		32		43		29		40	

Table 8: Percentage of students scoring at or above proficiency on selected history CST exams, 2007-08

	World History		U.S. History	
	%	(n)	%	(n)
Student group				
OSA	34.0	50	51.2	41
Oakland USD	11	2,688	20	1,793
Network Sites	26.4	921	39.6	1,272
State	33		38	

Appendix tables for Project Lead the Way at Barstow High School (PLTW-Barstow) within Barstow Unified School District (Barstow USD)
In the following tables, the distinction between high school and district is slight; Barstow USD has only one comprehensive HS.

Table 1: Gender and racial/ethnic distribution of secondary students, 2007-08

	Male		Female		Hispanic		White		African-American		Asian		All Other	
	%	#	%	#	%	#	%	#	%	#	%	#	%	#
Student group														
PLTW-Barstow	85.4	41	14.6	7	45.8	22	41.7	20	6.3	3	0.0	0	6.3	3
Barstow High School	51.9	995	48.1	923	44.0	844	31.6	607	18.2	349	1.9	36	4.3	82
Barstow USD	51.3	1,091	48.7	1,034	44.0	935	31.3	665	18.7	397	1.7	36	4.3	92
Network Sites	50.7	2,789	49.3	2,711	42.7	2,336	29.2	1,595	11.8	645	11.7	638	4.6	251
State	51.3		48.7		45.3		31.4		8.0		8.6		6.6	

Table 2: Attendance, promotion, and continuation rates of students, 2007-08

	Attendance Rates				Promotion from one grade to the next			12th grade graduation	Graduation having met a-g	Yearly continuation in program		
	9th	10th	11th	12th	9th	10th	11th			9th	10th	11th
	%	%	%	%	%	%	%	%	%	%	%	%
Student group												
PLTW-Barstow	92.8	93.3	92.2	92.5	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Barstow High School								76.4	33.7			
Barstow USD								79.2	30.3			
Network Sites	95.1	94.7	94.3	93.6	96.0	90.4	97.7	98.3	34.9	91.7	81.3	72.8
State								80.5	35.5			

Note: Comparison data for attendance and promotion rates are not publicly available. The school, district, and state graduation rates and graduation rates having met a-g requirements are from the 2006-07 school year. Rates for 2007-08 were not available as of January 15, 2009.

Table 3: Seniors' plans for activity after graduation, 2007-08

	4-yr only %	4-yr + empl. %	2-yr only %	2-yr + empl. %	tech/ appr. %	empl. only %	mili-tary %	other %	#
Student group									
PLTW-Barstow	—	—	—	—	—	—	—	—	0
Network Sites	36.2	1.9	34.6	14.7	2.9	3.5	4.8	1.3	373

Table 4: Percentage of 2007-08 10th-grade students passing the CAHSEE

	English Language Arts		Mathematics	
	%	(n)	%	(n)
Student group				
PLTW-Barstow	81.8	11	81.8	11
Barstow High School	72	490	69	491
Barstow USD	70	541	66	547
Network Sites	82.9	754	79.5	724
State	79		78	
PLTW-Barstow students, by race/ethnicity				
Hispanic	80.0	5	60.0	5
White	83.3	6	100.0	6
African-American	—	—	—	—
Asian	—	—	—	—
All Other	—	—	—	—

Table 5: Percentage of students scoring at or above proficiency on selected English CST exams, 2007-08

	English 9		English 10		English 11	
	%	(n)	%	(n)	%	(n)
Student group						
PLTW-Barstow	83.3	6	28.6	7	42.9	14
Barstow High School	41	471	30	491	29	374
Barstow USD	39	512	30	541	25	445
Network Sites	44.2	802	41.6	883	40.3	1,297
State	49		41		37	

Table 6: Percentage of students scoring at or above proficiency on selected mathematics CST exams, 2007-08

	Algebra 1		Geometry		Algebra 2		Summative Mathematics	
	%	(n)	%	(n)	%	(n)	%	(n)
Student group								
PLTW-Barstow	0.0	1	0.0	7	10.0	10	20.0	5
Barstow High School	2	437	8	287	11	368	16	90
Barstow USD	2	1,165	7	290	11	369	16	90
Network Sites	10.4	775	8.0	977	15.4	742	22.7	326
State	14		21		27		47	

Note: State and district rates calculated from publicly available data including only those students in grades 9 through 11.

Table 7: Percentage of students scoring at or above proficiency on selected science CST exams, 2007-08

	Biology		Chemistry		Physics		Earth Science		Life Science (10)	
Student group	%	(n)	%	(n)	%	(n)	%	(n)	%	(n)
PLTW-Barstow	—	0	100.0	2	0.0	16	—	0	—	0
Barstow High School	31	197	9	266	2	553	0	16	21	491
Barstow USD	30	204	9	266	2	553	0	18	21	539
Network Sites	38	1,179	11.6	668	19	327	33.9	313	35.3	676
State	42		32		43		29		40	

Table 8: Percentage of students scoring at or above proficiency on selected history CST exams, 2007-08

	World History		U.S. History	
	%	(n)	%	(n)
Student group				
PLTW-Barstow	50.0	6	21.4	14
Barstow High School	19	473	22	372
Barstow USD	19	497	19	441
Network Sites	26.4	921	39.6	1,272
State	33		38	

Table 9: Gender and racial/ethnic distribution of PLTW—Barstow students, 2006–07 and 2007-08

	Male		Female		Hispanic		White		African-American		Asian		All Other	
	%	#	%	#	%	#	%	#	%	#	%	#	%	#
School year														
2006-07	94.2	65	5.8	4	43.5	30	40.6	28	5.8	4	5.8	4	4.3	3
2007-08	85.4	41	14.6	7	45.8	22	41.7	20	6.3	3	0.0	0	6.3	3

Table 10: Attendance, promotion, and continuation rates of PLTW—Barstow students, 2006–07 and 2007-08

	Attendance Rates				Promotion from one grade to the next			12th grade graduation	Graduation having met a-g	Yearly continuation in program		
	9th	10th	11th	12th	9th	10th	11th			9th	10th	11th
	%	%	%	%	%	%	%	%	%	%	%	%
School year												
2006-07	88.7	89.0	90.1	87.6	70.6	100.0	95.0	100.0	—	—	—	—
2007-08	92.8	93.3	92.2	92.5	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

— No data

Table 11: PLTW—Barstow seniors' plans for activity after graduation, 2006-07 and 2007-08

	4-yr only	4-yr + empl.	2-yr only	2-yr + empl.	tech/ appr.	empl. only	mili-tary	other	
	%	%	%	%	%	%	%	%	#
School year									
2006-07	—	—	—	—	—	—	—	—	0
2007-08	—	—	—	—	—	—	—	—	0

— No data

Table 12: Percentage of PLTW—Barstow 10th-grade students passing the CAHSEE, 2006-07 and 2007-08

	English Language Arts		Mathematics	
	%	(n)	%	(n)
School year				
2006-07	100.0	4	100.0	4
2007-08	81.8	11	81.8	11

Table 13: Percentage of PLTW—Barstow students scoring at or above proficiency on selected English CST exams, 2006-07 and 2007-08

	English 9		English 10		English 11	
	%	(n)	%	(n)	%	(n)
School year						
2006-07	37.0	27	50.0	4	46.2	13
2007-08	83.3	6	28.6	7	42.9	14

Table 14: Percentage of PLTW—Barstow students scoring at or above proficiency on selected mathematics CST exams, 2006-07 and 2007-08

	Algebra 1		Geometry		Algebra 2		Summative Mathematices	
	%	(n)	%	(n)	%	(n)	%	(n)
School year								
2006-07	0.0	12	15.4	13	0.0	3	—	0
2007-08	0.0	1	0.0	7	10.0	10	20.0	5

— No data

Table 15: Percentage of PLTW—Barstow students scoring at or above proficiency on selected science CST exams, 2006-07 and 2007-08

	Biology		Chemistry		Physics		Earth Science		Life Science (10)	
	%	(n)	%	(n)	%	(n)	%	(n)	%	(n)
School year										
2006-07	18.5	27	66.7	3	75.0	4	—	0	50.0	4
2007-08	—	0	100.0	2	0.0	16	—	0	—	0

— No data

Table 16: Percentage of PLTW—Barstow students scoring at or above proficiency on selected history CST exams, 2006-07 and 2007-08

	World History		U.S. History	
	%	(n)	%	(n)
School year				
2006-07	—	0	18.2	11
2007-08	50.0	6	21.4	14

Appendix tables for Project Lead the Way at Lancaster High School (PLTW-Lancaster) within Antelope Valley Union School District (Antelope Valley USD)

Table 1: Gender and racial/ethnic distribution of secondary students, 2007-08

	Male		Female		Hispanic		White		African-American		Asian		All Other	
	%	#	%	#	%	#	%	#	%	#	%	#	%	#
Student group														
PLTW-Lancaster	91.0	61	9.0	6	37.3	25	47.8	32	9.0	6	1.5	1	4.5	3
Lancaster High School	48.4	1,552	51.6	1,655	36.4	1,167	30.8	989	26.2	841	2.3	74	4.2	136
Antelope Valley USD	50.6	13,382	49.4	13,069	47.4	12,543	26.7	7,054	21.1	5,580	1.6	424	3.2	850
Network Sites	50.7	2,789	49.3	2,711	42.7	2,336	29.2	1,595	11.8	645	11.7	638	4.6	251
State	51.3		48.7		45.3		31.4		8.0		8.6		6.6	

Table 2: Attendance, promotion, and continuation rates of students, 2007-08

	Attendance Rates				Promotion from one grade to the next			12th grade graduation	Graduation having met a-g	Yearly continuation in program		
	9th	10th	11th	12th	9th	10th	11th			9th	10th	11th
	%	%	%	%	%	%	%	%	%	%	%	%
Student group												
PLTW-Lancaster	96.5	96.9	94.5	95.5	100.0	100.0	100.0	100.0	28.6	100.0	100.0	100.0
Lancaster High School								71.0	25.2			
Antelope Valley USD								63.9	21.0			
Network Sites	95.1	94.7	94.3	93.6	96.0	90.4	97.7	98.3	34.9	91.7	81.3	72.8
State								80.5	35.5			

Note: Comparison data for attendance and promotion rates are not publicly available. The school, district, and state graduation rates and graduation rates having met a-g requirements are from the 2006-07 school year. Rates for 2007-08 were not available as of January 15, 2009.

Table 3: Seniors' plans for activity after graduation, 2007-08

	4-yr only %	4-yr + empl. %	2-yr only %	2-yr + empl. %	tech/ appr. %	empl. only %	mili-tary %	other %	#
Student group									
PLTW-Lancaster	7.7	23.1	15.4	53.8	0.0	0.0	0.0	0.0	13
Network Sites	36.2	1.9	34.6	14.7	2.9	3.5	4.8	1.3	373

Table 4: Percentage of 2007-08 10th-grade students passing the CAHSEE

	English Language Arts		Mathematics	
	%	(n)	%	(n)
Student group				
PLTW-Lancaster	94.1	17	88.2	17
Lancaster High School	81	788	75	783
Antelope Valley USD	75	5,781	71	5,742
Network Sites	82.9	754	79.5	724
State	79		78	
PLTW-Lancaster students, by race/ethnicity				
Hispanic	100.0	5	80.0	5
White	90.0	10	90.0	10
African-American	—	—	—	—
Asian	100.0	1	100.0	1
All Other	100.0	1	100.0	1

Table 5: Percentage of students scoring at or above proficiency on selected English CST exams, 2007-08

	English 9		English 10		English 11	
	%	(n)	%	(n)	%	(n)
Student group						
PLTW-Lancaster	70.0	10	52.9	17	56.0	25
Lancaster High School	46	768	36	774	36	605
Antelope Valley USD	39	5,958	34	5,635	28	5,479
Network Sites	44.2	802	41.6	883	40.3	1,297
State	49		41		37	

Table 6: Percentage of students scoring at or above proficiency on selected mathematics CST exams, 2007-08

	Algebra 1		Geometry		Algebra 2		Summative Mathematics	
	%	(n)	%	(n)	%	(n)	%	(n)
Student group								
PLTW-Lancaster	14.3	7	22.7	22	11.2	18	40.0	5
Lancaster High School	11	899	9	776	11	372	38	70
Antelope Valley USD	10	6,698	10	4,282	11	3,366	26	878
Network Sites	10.4	775	8.0	977	15.4	742	22.7	326
State	14		21		27		47	

Note: State and district rates calculated from publicly available data including only those students in grades 9 through 11.

Table 7: Percentage of students scoring at or above proficiency on selected science CST exams, 2007-08

	Biology		Chemistry		Physics		Earth Science		Life Science (10)	
	%	(n)	%	(n)	%	(n)	%	(n)	%	(n)
Student group										
PLTW-Lancaster	61.9	21	20.0	15	100.0	1	50.0	2	—	0
Lancaster High School	32	931	16	444	54	13	18	631	26	766
Antelope Valley USD	33	6,764	18	2,654	39	283	16	3,862	29	5,490
Network Sites	38	1,179	11.6	668	19	327	33.9	313	35.3	676
State	42		32		43		29		40	

Table 8: Percentage of students scoring at or above proficiency on selected history CST exams, 2007-08

	World History		U.S. History	
	%	(n)	%	(n)
Student group				
PLTW-Lancaster	29.4	17	64.0	25
Lancaster High School	18	784	33	602
Antelope Valley USD	22	5,750	30	5,196
Network Sites	26.4	921	39.6	1,272
State	33		38	

Table 9: Gender and racial/ethnic distribution of PLTW—Lancaster students, 2006–07 and 2007-08

	Male		Female		Hispanic		White		African-American		Asian		All Other	
	%	#	%	#	%	#	%	#	%	#	%	#	%	#
School year														
2006-07	88.1	52	11.9	7	35.6	21	50.8	30	8.5	5	1.7	1	3.4	2
2007-08	91.0	61	9.0	6	37.3	25	47.8	32	9.0	6	1.5	1	4.5	3

Table 10: Attendance, promotion, and continuation rates of PLTW—Lancaster students, 2006–07 and 2007-08

	Attendance Rates				Promotion from one grade to the next			12th grade graduation	Graduation having met a-g	Yearly continuation in program		
	9th	10th	11th	12th	9th	10th	11th			9th	10th	11th
	%	%	%	%	%	%	%	%	%	%	%	%
School year												
2006-07	93.4	93.3	91.9	91.1	87.5	80.0	100.0	88.9	100.0	62.5	93.3	40.7
2007-08	96.5	96.9	94.5	95.5	100.0	100.0	100.0	100.0	28.6	100.0	100.0	100.0

— No data

Table 11: PLTW—Lancaster seniors' plans for activity after graduation, 2006-07 and 2007-08

	4-yr only	4-yr + empl.	2-yr only	2-yr + empl.	tech/ appr.	empl. only	mili-tary	other	
	%	%	%	%	%	%	%	%	#
School year									
2006-07	—	—	—	—	—	—	—	—	
2007-08	7.7	23.1	15.4	53.8	0.0	0.0	0.0	0.0	13

— No data

Table 12: Percentage of PLTW—Lancaster 10th-grade students passing the CAHSEE, 2006-07 and 2007-08

	English Language Arts		Mathematics	
	%	(n)	%	(n)
School year				
2006-07	93.3	15	100.0	15
2007-08	94.1	17	88.2	17

Table 13: Percentage of PLTW—Lancaster students scoring at or above proficiency on selected English CST exams, 2006-07 and 2007-08

	English 9		English 10		English 11	
	%	(n)	%	(n)	%	(n)
School year						
2006-07	28.6	7	53.8	13	50.0	22
2007-08	70.0	10	52.9	17	56.0	25

Table 14: Percentage of PLTW—Lancaster students scoring at or above proficiency on selected mathematics CST exams, 2006-07 and 2007-08

	Algebra 1		Geometry		Algebra 2		Summative Mathematices	
	%	(n)	%	(n)	%	(n)	%	(n)
School year								
2006-07	42.9	7	6.3	16	12.5	8	—	—
2007-08	14.3	7	22.7	22	11.2	18	40	5

— No data

Table 15: Percentage of PLTW—Lancaster students scoring at or above proficiency on selected science CST exams, 2006-07 and 2007-08

	Biology		Chemistry		Physics		Earth Science		Life Science (10)	
	%	(n)	%	(n)	%	(n)	%	(n)	%	(n)
School year										
2006-07	63.6	11	50.0	12	0.0	2	—	—	—	—
2007-08	61.9	21	20.0	15	100.0	1	50.0	2	—	0

— No data

Table 16: Percentage of PLTW—Lancaster students scoring at or above proficiency on selected history CST exams, 2006-07 and 2007-08

	World History		U.S. History	
	%	(n)	%	(n)
School year				
2006-07	63.6	11	55.0	20
2007-08	29.4	17	64.0	25

Appendix tables for Space, Technology and Robotic Systems (STaRS) Academy at Lompoc High School within Lompoc Unified School District (Lopoc USD)

Table 1: Gender and racial/ethnic distribution of secondary students, 2007-08

	Male		Female		Hispanic		White		African-American		Asian		All Other	
	%	#	%	#	%	#	%	#	%	#	%	#	%	#
Student group														
STaRS	83.5	91	16.5	18	46.8	51	40.4	44	3.7	4	3.7	4	5.5	6
Lompoc High School	48.0	742	52.0	804	59.2	915	23.5	363	4.6	71	3.4	53	9.3	144
Lompoc USD	49.2	1,618	50.8	1,671	45.5	1,495	33.6	1,106	5.0	164	2.8	93	13.1	431
Network Sites	50.7	2,789	49.3	2,711	42.7	2,336	29.2	1,595	11.8	645	11.7	638	4.6	251
State	51.3		48.7		45.3		31.4		8.0		8.6		6.6	

Table 2: Attendance, promotion, and continuation rates of students, 2007-08

	Attendance Rates				Promotion from one grade to the next			12th grade graduation	Graduation having met a-g	Yearly continuation in program		
	9th	10th	11th	12th	9th	10th	11th			9th	10th	11th
	%	%	%	%	%	%	%	%	%	%	%	%
Student group												
STaRS	96.8	96.9	96.8	95.4	94.9	100.0	95.7	100.0	22.2	64.1	92.9	73.9
Lompoc High School								79.9	25.2			
Lompoc USD								85.1	41.2			
Network Sites	95.1	94.7	94.3	93.6	96.0	90.4	97.7	98.3	34.9	91.7	81.3	72.8
State								80.5	35.5			

Note: Comparison data for attendance and promotion rates are not publicly available. The school, district, and state graduation rates and graduation rates having met a-g requirements are from the 2006-07 school year. Rates for 2007-08 were not available as of January 15, 2009.

Table 3: Seniors' plans for activity after graduation, 2007-08

	4-yr only %	4-yr + empl. %	2-yr only %	2-yr + empl. %	tech/ appr. %	empl. only %	mili-tary %	other %	#
Student group									
STaRS	5.6	0.0	0.0	66.7	11.1	5.6	11.1	0.0	18
Network Sites	36.2	1.9	34.6	14.7	2.9	3.5	4.8	1.3	373

Table 4: Percentage of 2007-08 10th-grade students passing the CAHSEE

	English Language Arts		Mathematics	
	%	(n)	%	(n)
Student group				
STaRS	96.4	28	100.0	28
Lompoc High School	79	407	75	410
Lompoc USD	80	814	77	814
Network Sites	82.9	754	79.5	724
State	79		78	
STaRS students, by race/ethnicity				
Hispanic	90.0	10	100.0	10
White	100.0	14	100.0	14
African-American	100.0	2	100.0	2
Asian	100.0	1	100.0	1
All Other	100.0	1	100.0	1

Table 5: Percentage of students scoring at or above proficiency on selected English CST exams, 2007-08

	English 9		English 10		English 11	
	%	(n)	%	(n)	%	(n)
Student group						
STaRS	51.3	39	51.8	27	68.2	22
Lompoc High School	43	376	32	391	35	332
Lompoc USD	52	877	39	802	41	677
Network Sites	44.2	802	41.6	883	40.3	1,297
State	49		41		37	

Table 6: Percentage of students scoring at or above proficiency on selected mathematics CST exams, 2007-08

	Algebra 1		Geometry		Algebra 2		Summative Mathematics	
	%	(n)	%	(n)	%	(n)	%	(n)
Student group								
STaRS	4.3	23	29.0	31	46.6	15	83.3	6
Lompoc High School	4	355	13	290	15	117	62	21
Lompoc USD	7	754	21	612	19	262	50	93
Network Sites	10.4	775	8.0	977	15.4	742	22.7	326
State	14		21		27		47	

Note: State and district rates calculated from publicly available data including only those students in grades 9 through 11.

Table 7: Percentage of students scoring at or above proficiency on selected science CST exams, 2007-08

	Biology		Chemistry		Physics		Earth Science		Life Science (10)	
	%	(n)	%	(n)	%	(n)	%	(n)	%	(n)
Student group										
STaRS	53.3	30	40.0	15	71.4	7	58.6	29	70.3	27
Lompoc High School	24	524	24	104	30	46	25	277	27	387
Lompoc USD	41	976	46	245	30	47	37	669	41	794
Network Sites	38	1,179	11.6	668	19	327	33.9	313	35.3	676
State	42		32		43		29		40	

Table 8: Percentage of students scoring at or above proficiency on selected history CST exams, 2007-08

	World History		U.S. History	
	%	(n)	%	(n)
Student group				
STaRS	55.5	27	59.1	22
Lompoc High School	21	408	36	325
Lompoc USD	32	806	47	666
Network Sites	26.4	921	39.6	1,272
State	33		38	